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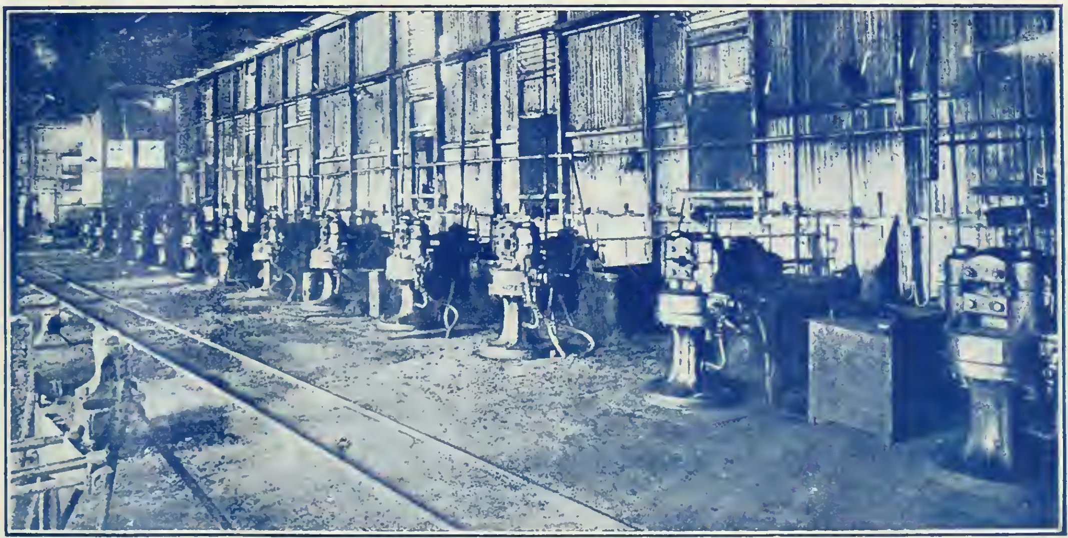

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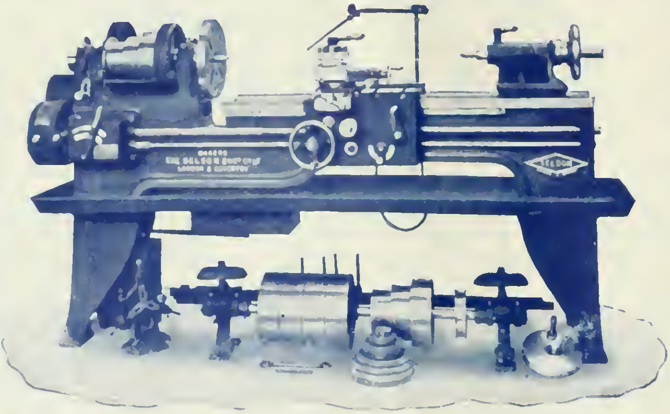

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JOHANNESBURG.

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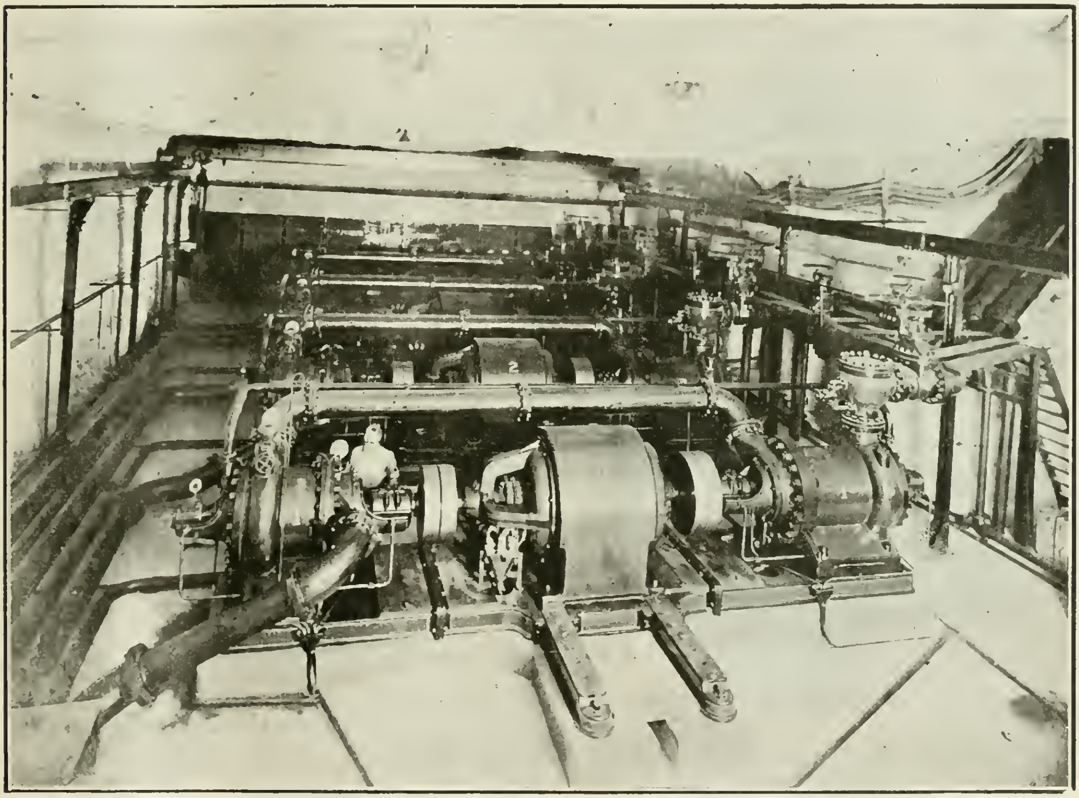
ARGUS, JO'BURG—7545

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

VOL. XXXI., PART I.] JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 5, 1921. [No. 1536.

The New Randfontein Pumping Plant.



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These are situated on the 18th level, new north vertical shaft. The water pumped is about 3,600,000 gallons per 24 hours. The installation of these powerful pumps forms part of the scheme of reorganisation of underground work at Randfontein, which is dealt with in another portion of this issue.

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THE REJUVENATION OF RANDFONTEIN.

REORGANISATION SCHEME NEARING COMPLETION—NEW SOUTH VERTICAL SHAFT TO BE IN COMMISSION IN JULY—BIG ECONOMIES ANTICIPATED—OPENING UP THE HORSHAM-LINDUM SERIES—TWO INCLINED SHAFTS TO BE SUNK—PROMISING VALUES—THE CORNER TURNED?—PAST PREJUDICES AND PRESENT PROGRESS—THE HALF A MILLION CASE.

The reorganisation scheme on the great West Rand property is now approaching completion. The north vertical shaft is in commission, the south vertical shaft should be ready by July, and two new shafts are to open up the outcrop section of the old Randfontein Deep claims. The Randfontein Central has never yet shone as a dividend distributor. For 1912 the company distributed 5 per cent., for 1913 10 per cent., and for 1915 2½ per cent. There have been no distributions since. It is no secret that since the acquisition of the property by the Barnato Group Randfontein has caused its new owners not a little anxiety. The position to-day is, however, improving slowly but surely. The future of Randfontein unquestionably depends in the main on the economical working of the reefs in the mines. Since the Johannesburg Consolidated Investment Company took the proposition in hand a scheme of reorganisation of underground work has been given effect to, and in the following article the position and prospects of this hitherto disappointing property are considered in detail. Reference is also made to recent law suits, which have resulted in the Randfontein Estates Company winning appeals which involve colossal sums of money.

The new scheme of reorganisation of underground work at Randfontein is nearing completion, and will come into operation in the near future. The new north vertical shaft has been in commision for some time now, and the south vertical shaft is expected to be in use about July. Arrangements in regard to the completion of the scheme at the south vertical have been hindered by delay in the delivery of a portion of the very big hoist which is being installed at this shaft. These hoists are of the Ward-Leonard type and will be capable of hoisting a five-ton skip from a depth of 5,000 feet at a speed of 4,000 feet per minute.

Barnatos Setting Their New House in Order.

Randfontein has hitherto been the white elephant proposition of these fields. It is not too much to say that the various subsidiaries which to-day constitute the Randfontein Central property have without exception been the largest disappointment of the Witwatersrand. However, when the house of Barnato acquired Randfontein, they immediately set about putting their new house in order in accordance with the sound and progressive policy pursued by this group at other mines. A reorganisation scheme was put into practice and matters have so far progressed that Randfontein appears to be at last within measurable distance of achieving a larger measure of success than it has ever hitherto enjoyed.

Past Disappointments.

In former years there was always some unforeseen eventuality which clouded the sky of achievement at the last moment and which dimmed the lustre of the "Robinson" constellation of properties—shortage of unskilled labour or delay in the delivery of new plant or stores, for example. Of these matters the public knew little until the annual meeting was held, and disappointments were explained simultaneously with the buoying up of fresh hopes. But the frequent changes in management made the public sense it that the administration was neither happy nor harmonious. With the new scheme of working in operation, however, Randfontein with its 600 stamp battery—the largest single milling unit in the world—should, provided the gold premium does not entirely disappear, be able to earn substantial profits.

The New Scheme.

The essential features of the reorganisation work which have been in progress at Randfontein for a long time past are the abandonment of numerous old and inefficient shafts and concentration of hoisting and pumping at two new shafts, known as the north and south verticals.

Randfontein's Present Head, Mr. S. B. Joel, now on a Visit to South Africa.

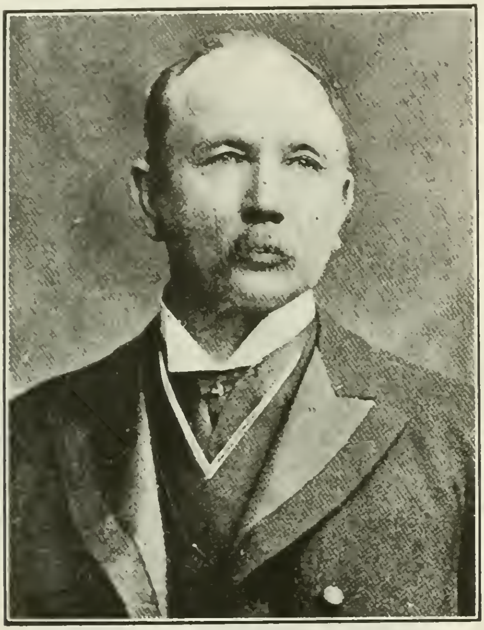
The North and South Verticals.

In the north vertical shaft the Leader and West Reefs were intersected at the latter end of 1919, and gave the following values: Leader, depth 3,210 feet, 9·8 dwts. over 48 inches; West Reef, depth 3,560 feet, 9·8 dwts. over 48 inches. Sinking in this shaft was stopped in the second quarter of last year, a depth of 3,896 feet having been attained. This shaft is 1,700 deeper than the average depth of workings on the Nos. 5 and 6 sections, and no further sinking will be necessary for a number of years. A main pumping station of large capacity has been installed in the north vertical shaft and is depicted on the frontispiece of this week's issue.

In the south vertical sinking has been suspended at a depth of 4,712 feet Development is now being pushed ahead from this point of attack in the mine and preparations are being made for changing over from the old shafts in this section to the new.

Exploitation of the Randfontein Deep Claims.

A few months ago the Randfontein Company absorbed the Randfontein Deep Company's 1,255 claims. This property contains the Lindum and Horsham Reefs (outcrops) and Randfontein Reef (deep level). A considerable tonnage of low-grade ore was developed in the Horsham and Lindum Reefs some years ago, but work on these two reefs was suspended in 1909, and efforts were concentrated on the opening up of the deep levels The sinking of two vertical seven-compartment shafts, both situate on the western boundary, 3,625 feet apart, was commenced January, 1910, and at February, 1912, had reached depths of 2,083 feet and 1,650 feet respectively, but all operations were subsequently suspended. It was estimated that each shaft would have to be sunk to a depth of betwen 3,500 feet and 4,000 feet before reaching the reef.



—And its former Presiding Genius: A Photo of Sir Joseph Robinson taken some years ago.

The property then remained idle for a number of years until its absorption by the Randfontein Central and in the September quarter of last year prospecting work on the Randfontein Deep property was commenced, and two boreholes were sunk, with a view to determining the dip of the reef. It is highly important to learn that two new incline shafts are now being sunk on this portion of the property. These reefs extend over a strike of 11,000 feet on the property, and although they are of average low-grade value they are of good width and there is a prospect of large tonnages of ore being derived from this section of the proposition and being rushed at a fair margin of profit.

Recent Results.

The rearrangement of underground work and trouble with the old shafts has naturally enough adversely affected recent returns. Thus in the July-September quarter, owing to the collapse of the Robinson shaft and the closing of No. 8 and No. 9 sections, the quantity of ore crushed was 31,000 tons less than during the previous quarter. The revenue at 28s. 2d. per ton was 3s. 2d. per ton higher, and the working costs were 2s. 1d. lower than for the preceding three months, and resulted in a working profit of £50,049 as compared with a loss of £58,482 for the previous quarter.

In the October-December quarter the expenditure on capital account amounted to £61,275, and debenture interest to £31,378. The full effect of the closing of the northern section of the mine and the collapse of the Robinson shaft was felt during the quarter, and the north vertical shaft only came into commission towards the end of December, with the result that the quantity of ore crushed was 87,500 tons less than during the preceding three months. The working costs at 28s. 10d. were 3s. 2d. per ton higher, but as the revenue at 33s. 7d. per ton showed an improvement of 5s. 5d. per ton, the working profit was £23,869 more than for the previous quarter. The development footage sampled totalled 5,210 feet, and gave the following results: Payable, 4,435 feet, having an average value of 22·2 dwts. over 18 inches of reef. Unpayable, 775 feet, having an average value of 4·7 dwts. over 32 inches.

The Lawsuit and what it Means.

In regard to the financial position of the Randfontein Estates it should not be lost sight of that recent lawsuits have awarded the company a very large sum of money, which, taken in conjunction with the interest over a lengthy period of years will greatly improve the financial position of the parental company. Without going over much of the complicated ground of this "Half Million Case," it may be observed that one of the most important and complicated mining cases ever heard in South Africa concluded in the Appeal Court at Capetown a few days ago. This was the case of Randfontein Estates v. Sir J. B. Robinson, and the appeal by Sir J. B. Robinson failed and was dismissed.

The Biggest Mill on Earth: Randfontein Central's 600-Stamp Installation.

Grounds of Action.

The causes of action were (1) defendant's purchase in 1906 of the undivided half-share for £60,000 and his sale of this to the Trust for the sum of £275,000, plus £99,000; (2) the sale in March, 1909, to plaintiff of several blocks of claims for 164,000 shares in the Central Gold Mining Company, Ltd., valued at £297,250 and alleged to have been purchased by defendant for £45,000.

The plaintiff claimed £451,576 14s. 6d. being the profit alleged to have been illegally retained by the defendant out of the sales by him to the plaintiff company, the sum being made up as follows: (1) Alleged profit of £215,000 on the Waterval sale; (2) alleged profit of £236,576 14s. 4d. on the sale of blocks of claims on the properties in the Krugersdorp district. Alternatively £500,000 was claimed as damages.

The Provincial Judgment.

Mr. Justices Mason and Gregorowski concurred in giving judgment for the plaintiffs with costs on the first claim in respect to the purchase of half share in Waterval for

£215,000 less any additional costs or expenses incurred by defendant beyond the £60,000 paid. It was held that the plaintiff could not make any claim to the blocks of claims held by defendant prior to the amalgamation being mooted. The Judge President, Sir Johannes Wessels, delivered a dissenting judgment.

Defendant appealed against this judgment. Plaintiffs cross-appealed for the full amount previously claimed and not awarded by the Pretoria Court. The defendant appealed against the order as to Waterval, and the plaintiffs cross-appealed not only against the decree of absolution, but also against the main award, which it was contended should be increased by an amount of £10,360.

The Randfontein Estates have now fully established their claims, and although settlement of this case may be delayed by further appeal or counter-suit, it is patent that the former controller of Randfontein is, according to the recent judgment, indebted to the present for a sum of money large enough to put even a heavily capitalised concern like Randfontein in an enviable financial position.

The New Randfontein and its Outlook.

These then are the present-day facts about Randfontein, the once "lone hand" proposition of the Reef, which has never yet made good in the truest sense of that term. Whether it will achieve that consummation so much to be desired or not remains to be seen; the probabilities are that it will. Many problematical and little understood factors in combination have all conspired to make Randfontein not only the white elephant of the Rand but also in some degree the mystery proposition of these gold fields. Under the old Robinson régime publicity in regard to Randfontein was never sought or courted. We recollect that during Mr. Pope Yeatman's period of office as consulting engineer to the Randfontein group we were escorted over the surface works of the four subsidiaries then equipped. But a request to examine assay plans and to inspect the underground workings was met by a courteous but nevertheless firm refusal.

That position has now been changed. Randfontein is no longer an enigma of the mining world but a progressive undertaking with improving prospects, and we are tempted to believe that no other gold mine on these or any other fields is likely to witness a greater improvement during the next few years than the colossus of the West Rand, which is now within measurable distance of rejuvenation and the earning of dividends.

GLYNN'S LYDENBURG.

The report of the directors of Glynn's Lydenburg, Ltd., for the quarter ended 31st January, 1921, states: Development footage, 1,203 feet; footage sampled, 550 feet. The payable reef disclosures were as follows:—Compound Hill, 60 feet; reef width, 26·8 inches; assay value, 9·5 dwts. Werf Mynpacht, 90 feet; reef width, 14·3 inches; assay value, 10·2 dwts. Tonnage milled, 9,494 tons; total yield, 3,493 fine ozs.; total yield per ton milled, 7·359 dwts. Working revenue, £20,518, equal to 43s. 2d. per ton milled; working costs, £17,660, equal to 37s. 2d. per ton milled; working profit, £2,858, equal to 6s. per ton milled. Amount received during the past half-year above the monthly valuation placed on gold in respect of sales realised in London up to 31st December, 1920, £2,482; sundry revenue, £1,569; total profit, £6,909. Taxation, £664; capital expenditure, £573. Development to the south in Compound Hill is still unpayable, but to the north continues payable. Development south and west of Werf Mynpacht continues to disclose payable ore. Prospecting has been continued without any payable discovery. Native labour continues scarce. Dividend No. 39 of 1s. per share has been declared.

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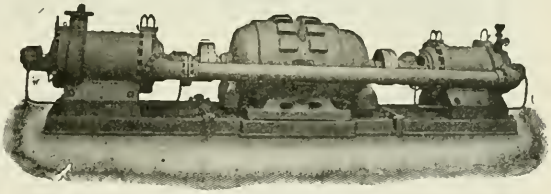

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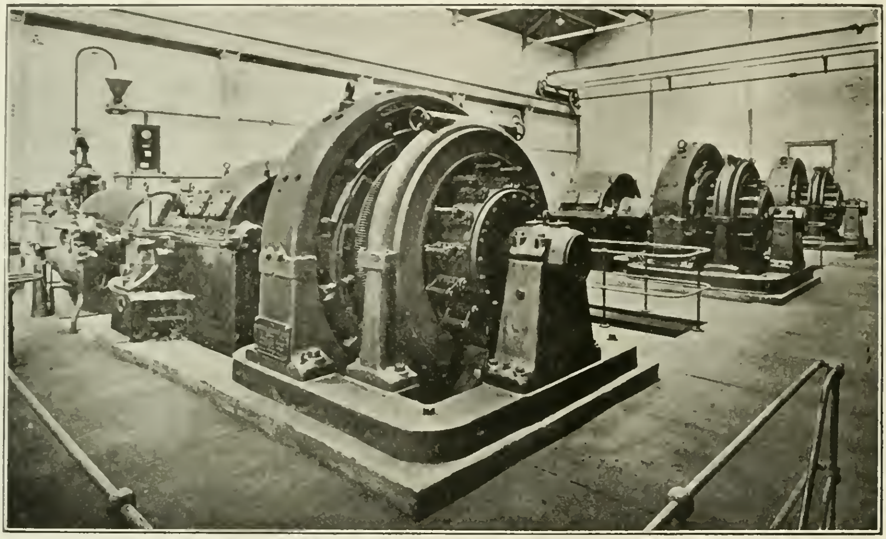

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Recruiting from Northern Latitudes.

THAT EXPERIMENTAL BATCH—WHY THE GOVERNMENT SHOULD FULFIL ITS PROMISES—THE UNION'S GROWING REQUIREMENTS—FALLACIES ABOUT "TROPICAL" LABOUR—HUGE RESERVOIRS OF SUPPLY IN THE INTERIOR—TANGANYIKA TERRITORY'S POPULATION—THE LISTER VACCINE—FADDISTS AND POLITICAL CHICANERY—DEMAND OF THE NATAL COLLIERIES.

Objections to the recruitment of native labour in latitudes north of 22 degrees are purely faddist, and in view of the proved efficiency of the anti-pneumonic vaccine discovered by Sir Spencer Lister and of the Government's promise of several months ago to allow the recruiting of a trial batch of "tropicals" for the Rand, it is felt that steps should immediately be taken to secure the fulfilment of the Government's undertaking. The native labour supplies of the Union need augmentation, and there is no sane reason why natives should not be secured from the high lying plateaux of the interior, where climatic conditions are not dissimilar to those obtaining on the Witwatersrand. White labour faddists, aborigine protectionists and planters with axes to grind have, by intrigue and agitation, induced the Colonial Office to look with disfavour on these proposals. But it is known to everyone who saw service in the "German" East campaign that the British Government was not particularly scrupulous about the health or welfare of the silent, sullen peoples of the Protectorates during the war; and in the face of indisputable facts as to the Lister vaccine, the good treatment accorded mine boys on the Witwatersrand, and the growing labour requirements of the country, it is strongly felt that all these unreasoned prejudices and pieces of political chicanery should be swept aside, and that, at any rate, the experimental batch should be allowed to be recruited forthwith.

One of the few bright spots in the dulled firmament of the Mining Industry at the present moment is to be found in the fact that the returns of native labour show an increasing number of boys at work on the mines. The last return available gave an increase in the number of boys employed on the gold mines of 5,616 since the end of last year. The total number of employed stands at 165,287, as compared with 159,671, and it is understood that recruiting returns continue to be good.

A Passing Phase.

This is fairly satisfactory as far as it goes, but it should be remembered that at this time of the year a larger number of natives present themselves for employment than at any other period, because it is the intervening or betwixt time between the seasons of ploughing and sowing of native crops. There is no likelihood of the increase being maintained; on the contrary, it is fairly certain that, as in other years when the incidence of the reaping season begins to make itself felt, there will again be a decline in the native labour returns.

An Annual Excuse.

The question of maintaining an adequate supply of coloured labour for the many and increasing needs of South Africa becomes more difficult of solution as the years go by. Ever since the Witwatersrand became an industrial centre of importance and a large employer there has been an increasing and ever-growing demand for cheap unskilled labour. For years past company chairmen presiding at the meetings of South African gold, diamond and coal mines have used the shortage of native labour as a perennial excuse for failure to secure the results prognosticated at the previous annual meeting.

In this respect "shortage of native labour" has perhaps played its part of usefulness in a goldfield which has prospered and suffered on industry and speculation, but the apology is now so trite that few shareholders give it much heed.

Demands Increasing.

Nevertheless, it is an indisputable fact that our mining and agricultural progress has been greatly impeded by an insufficiency of that human material which is well called "the essential Kaffir."

For a time the substitution of Chinese for black labour relieved the situation, but with the departure of the Celestials—and more recently, since the prohibition of recruiting in areas north of latitude 22 degrees south—scarcity of labour has been accentuated.

The shortage has become more acute as agriculture, coal mining and other industries have expanded, and although exhaustion of numerous old Main Reef companies and cessation of work at other Witwatersrand mines through inability to earn profits have, in the absence of any large developments at new mines, tended to ameliorate the conditions in regard to native labour at the gold mines, the demands of the country in other directions are increasing so rapidly that shortage of supply continues. Curtailment of operations at Kimberley and at the Premier will release large numbers of boys, many of whom will doubtless be available for work on the Rand; but nevertheless, the requirements of farms, railways, collieries, sugar plantations and industries are increasing, and native labour shortage appears to be a problem for ever with us.

The Big Mine Boys' War Dance, held at the Wanderers on Sunday last.

Case of Natal Collieries.

Consider the expanding coal mines of Natal, for example. The collieries of the Garden Colony are finding it more and more difficult to secure their unskilled labour requirements. The numbers of Indians available are diminishing, and recent expansion of operations has made it necessary for the colliery owners to seek a more effective organisation than hitherto has prevailed to keep their compounds partially full.

Geographical Fiction.

The assumption that all portions of Africa north of the 22nd parallel of south latitude are tropical is utterly wrong, and it is now generally admitted that the perpetuation of this piece of geographical fiction puts an unfair handicap upon South African industries. There are many areas in northern latitudes where climatic conditions are not dissimilar to those prevailing on the Witwatersrand; and even if Sir Spencer Lister's researches had not removed the pneumonia trouble, there would be no valid excuse for refusal to permit recruiting in such localities on the grounds of probable bad effect on the healths of the natives concerned. Take, for instance, Tanganyika territory, the mandatory portion of Africa, hitherto known as German East Africa, and the districts contiguous to that area around its southern borders. The conquered Colony has a black population of between seven and eight millions, and a study of a map of the territory, which portrays altitudes and density and types of population, exhibits the fact that the hardiest tribes tend to congregate on the high plateaux of the interior. The mean altitude of a considerable belt of country extending from the north end of Lake Nyasa almost up to the central railway is as great as that of the Rand, and the climate is not dissimilar to that of the High Veld. There are similar areas in the portion lying north of the Dar-es-Salaam-Tanganyika railway. These districts supplied hundreds of thousands of porters during the recent military operations, and the amount of pay earned by them from the British has created a certain amount of wealth, with its concomitant desire for further employment as a means to greater possessions. Yet, so far, this huge reservoir of strong, hardy and efficient labour has scarcely been touched. Just before the outbreak of War a Government return of natives in European employment showed that 139,520 were so employed. In addition, some 25,000 were in the employ of Arabs and Indians. Wages ranged from 3 to 12 rupees per month, in addition to food. Natives employed on the Central Railway received from 8 to 10 rupees and a food allowance of 15 hellers (2½d.) a day. It will be seen that only a small tithe of the aboriginal population was brought into the economic scheme under German rule. Here, then, is an immense field for the recruitment of native labour against the utilisation of which nothing can be really urged. We some time ago suggested to the Chamber of Mines and to the Government that the possibilities of augmenting South Africa's labour supply from the new British possession should be seriously considered without reference to any sentimental balderdash about making the Union a white man's country—which is a thing that it can never truly be—and we make this suggestion again now

A Group of Mine Boys in a Rand Compound.

Faddist Opposition.

Objections to the employment on the mines of the Witwatersrand of native labour recruited in areas north of latitude 22 are to-day of a purely faddist nature. The white labour policy initiated by Colonel Creswell at the Village Main Reef in 1902 was an absolute failure, and the statements that have been made since then as to the possibility of turning South Africa into a white man's country are what our American friends would term so much "hot air." The pneumonia trouble has been overcome by scientific research, and the idea that all boys who live north of that mysterious line of political chicanery which is called 22 reside in low-lying valleys and fevered swamps has been exploded so long ago that the fallacy is really scarcely worth while worrying about.

The Government's Promise.

In view, then, of the urgent and increasing coloured labour requirements of the country, it is to be hoped that in the coming session of Parliament legislation will be enacted which will at least admit of the experiment of recruiting northern natives, which was promised by the Government a good many months ago, being carried out without delay.

If these so-called tropical boys are found to be unsuitable for underground work, they could be employed on farms or other above-ground industries, thereby releasing a corresponding number of South African natives for mine employment.

It is absurd and preposterous that this vital question of native labour resources should be indefinitely shelved on account of the agitation of a few fanatical disciples of an utterly impossible white labour policy, allied with Exeter Hall and Nyasaland planters, who consider that every Yao and Angoni in the country is their own personal and inalienable property.

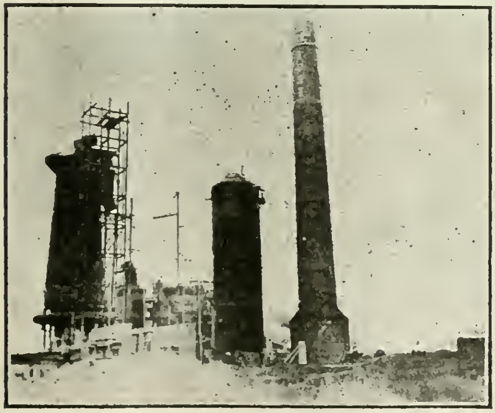
Newcastle Iron and Steel.

SATISFACTORY PROGRESS—PRODUCTION TO COMMENCE IN THE MIDDLE OF THIS YEAR—ACCUMULATING ORE ON THE IRON AREAS—DETAILS OF INSTALLATION—COAL, FLUX AND FINANCE.

The pleasant little town of Newcastle, in Northern Natal, is now the scene of budding activity, which promises to develop rapidly into an industry of foremost importance to the country. Situated on the main line, roughly halfway between Johannesburg and Durban, and conveniently placed in regard to all the large industrial centres of the Transvaal, Orange Free State and Natal, with extensive coal measures in its immediate vicinity, an abundance of water and a good, healthy climate, Newcastle, is ideally situated for the establishment of industrial enterprises, and one must congratulate Mr. J. K. Eaton, the promoter and managing director of the Newcastle Iron and Steel, Ltd., in his choice of a site for the establishment of an iron and steel works. Constructional work at this enterprise is now nearing completion, and it is anticipated that production will commence about the middle of this year.

It is now practically assured that the Newcastle Iron and Steel Works will commence production about the middle of this year, and a very great deal of interest naturally attaches itself to the operations of this venture, which, despite many obstacles, has now come within measurable distance of the commencement of the manufacturing stage.

BLAST FURNACE, STOVES & STACK, NEWCASTLE IRON AND STEEL WORKS.



The above photograph, taken a few days ago, exhibits the blast furnace on the left, the dust extractor, an oven partially built, a completed oven, and smoke-stack.

Although progress has been considerably hampered by a strike and by great difficulty in obtaining good bricklayers, constructional operations are now proceeding very satisfactorily, and it is expected that the works will attain to the productive stage about June. Mr. J. K. Eaton, the enthusiastic managing director of the company, is at the present moment residing on the property, and is busily engaged in the work of general supervision.

Some Details of Equipment.

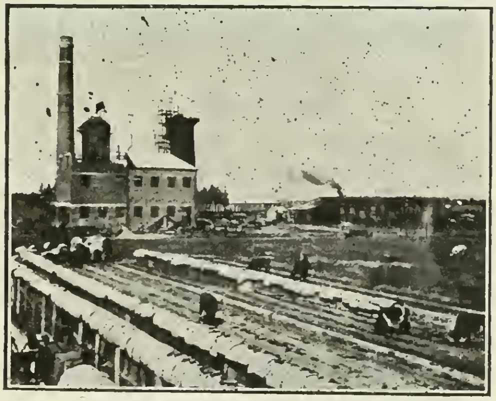
We give herewith a number of photographs taken just recently, and which illustrate the constructional progress attained and the stage which has been reached to-day.

The smoke stack, 150ft. in height, will be noted, and also the blast furnace, and it is to be observed that one of the Cowper stoves is completed, and that another stove is partially constructed. There will in all be four of these stoves, but productive operations will be commenced with two stoves only. Ore bins are nearly completed, work is well advanced with regard to European living quarters, and construction of coke ovens is progressing. In all there will be 50 ovens, arranged in ten series, each of which will contain five ovens. The blast furnace is a water-cooled Bosch furnace of most modern type, 70ft. high, and of 3,000 tons per month capacity. For a start the furnace will be hand charged, but everything has been erected with a view to mechanical charging at a later date.

A site for another furnace of similar design has been selected, and it is proposed to instal this in the fairly near future. Two Sterling boilers are in place, and auxiliary boiler plant, consisting of three Beddington boilers, fired with pulverised fuel, will be installed.

Good flux can be obtained from near at hand, and there is an abundant and amply sufficient water supply in the Incanda River, right alongside the works. The foundry will be of most modern type. It will be complete with a high capacity electric crane, and capable of turning out the very heaviest castings.

A GENERAL VIEW OF THE NEWCASTLE IRON AND STEEL WORKS.



This photograph illustrates how construction work has been pushed on at Newcastle. In the foreground large quantities of bricks are drying under corrugated iron covers.

A fact that should not be lost sight of is that Newcastle is the centre of an important agricultural district, and the by-products of the Newcastle Iron and Steel Co., Ltd., will be of great value to farmers.

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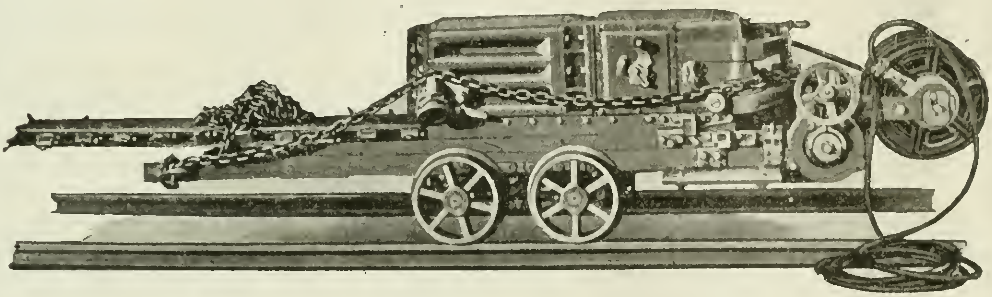

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Durban Navigation Coy.
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Buffalo Collieries.
Natal Navigation Collieries.

A branch line 500 yards long has been laid, connecting up the main railway with the works.

The company has its own brickworks, and produces an excellent type of brick. These are employed in the construction of furnaces, smoke stacks, foundry, workshops, offices and compounds, etc., and the consequence is that the 150 acres of freehold land on which the Newcastle Iron and Steel Works are being installed have already attained the appearance of a well-erected, well-housed, well-laid-out and extensive industrial annexe to the town of Newcastle.

Cheap Coking Coal Available.

The company is drawing coal from the Ballengeich Coal Mine, but has its own colliery within two miles of the works. The coal here is suitable for coking, and large quantities are available on the basis of an exceedingly moderate royalty.

ONE OF THE SERIES OF COKE OVENS AT THE NEWCASTLE IRON AND STEEL WORKS.

The photograph illustrates one of a series of coke ovens nearing completion. There will be ten of such series, with five ovens in each, making a total of 50 ovens.

The Ore Supply.

On the mineral areas held by the company in the Dundee and Utrecht districts large quantities of iron ore have been accumulated and are ready to be transported by wagon to the line for despatch to the works, which are conveniently situated right alongside the main Johannesburg-Durban railway line.

The farms held by the company are estimated to contain immense quantities of iron ore suitable for smelting, and it is considered that ore can be mined, transported by wagon to the line and railed to the works at an inclusive cost of 10s. to 12s. 6d. per ton.

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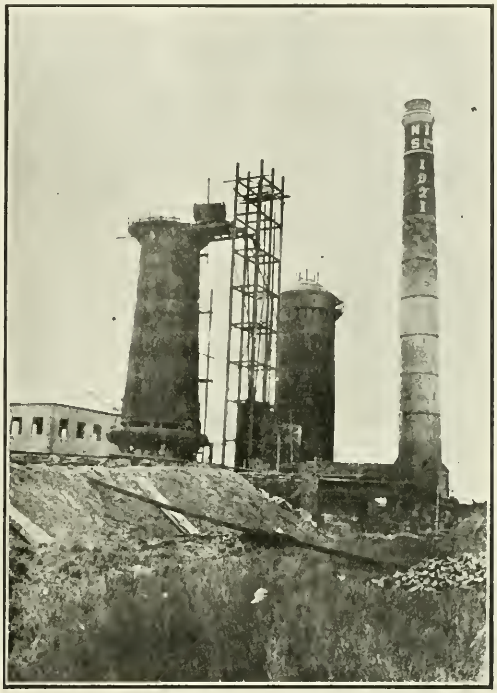
Moderate Capital.

It will be recalled that the Newcastle Iron and Steel Co., Ltd., was floated in March last year, the allocation of capital being:—

For property, plant, equipment and mineral options taken over from vendor (in shares)	£40,000
Estimated cost of additional plant and equipment to complete works	60,000
For further working capital	25,000
	£125,000



Another view of the blast furnace, stoves and stack.

Since flotation an important group has become interested in the venture, and, despite the moderate capital of the company, the works have now nearly reached the stage of manufacture.

An Up-hill Struggle.

Mr. Eaton and his associates have had a hard, up-hill fight to bring the Newcastle Works to their present state, but the back of the constructional work has now been broken, and the firing of the furnace in about four months' time will be an event of great importance to Northern Natal.

MINES DEPT. EXAMS., 1920.

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Manager's Certificates,
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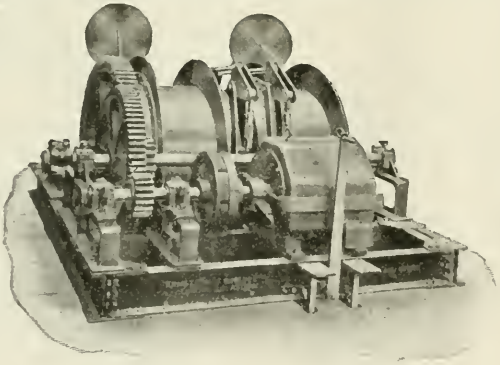

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MINING AT GREAT DEPTHS.

A FURTHER ABSTRACT OF MR. CLIFFORD'S VALUABLE PAPER—THE CITY DEEP SCHEME—A TREATISE ON PHYSIOLOGICAL CONDITIONS IN DEPTH—VALUABLE KATATHERMOMETER DATA.

II.—THE HUMAN FACTOR.

An abstract of the second portion of Mr. Clifford's important paper on the scheme for deep mining at the City Deep is given hereunder. It contains the results of much important research work into that little known field of technology which concerns the welfare and efficiency of labour under deep mining conditions.

In submitting his noteworthy paper, Mr. Clifford pays a general tribute to the numerous gentlemen who worked out the details of the scheme with him and desires particularly to express thanks to Mr. Percy Sherwell and Mr. R. R. Perkin, respectively manager and assistant manager of the City Deep, Ltd., to Mr. E. C. J. Meyer, general manager of the East Rand Proprietary Mines, Ltd., to Mr. L. D. Hingle, of the Central Mining and Investment Corporation's engineering staff, to Professor R. A. Lehfeldt, of the South African School of Mines and Technology, and to Dr. A. J. Orenstein and Mr. H. J. Ireland, of the Department of Sanitation, Rand Mines, Ltd.

In our last issue we gave a lengthy abstract of the first portion of Mr. E. H. Clifford's noteworthy contribution to the technical literature of these fields, entitled "A Scheme for Working the City Deep Mine at a depth of 7,000 feet," which was read at the last meeting of the South African Association of Engineers. The paper is of considerable length, and is of so much importance that we decided to deal with it in two instalments rather than to sacrifice many important data in the cause of brevity. Last week we reproduced portions of the paper dealing with the general considerations of the problem, the lay-out of the shaft, its capacity, hoisting arrangements, and operations to date. The second portion of Mr. Clifford's address, deals with problems relating to ventilation, air temperatures and working conditions from a physiological standpoint. In the instalment, which was published in our last issue, we dealt with the mechanical side of the problem. In this the human factor will be considered. It is this aspect of the deep mining question which has called for very close consideration and which has given the technical heads of the industry more anxiety than the problems which a few years ago were considered to be paramount problems relating to hoisting from great depths, for example. The mean rise of temperature on the Witwatersrand as greater depths are attained is markedly low, but nevertheless when big depths are reached, depths such as have been attained in the Village Deep, and such as are in prospect for the City Deep, the physiological side of the problem becomes most important. In the course of his paper Mr. Clifford remarks:

While it has been realised for a long time that temperature and humidity were also factors of importance, it is to the recent researches of Dr. Leonard Hill, F.R.S., and his associates that we owe an adequate statement of the physiological theory of ventilation.

Apart from the presence of definite poisonous or explosive gases and of certain kinds of dust, the most important condition of mine air is its cooling power on the human organism.

The Katathermometer:

This quantity depends chiefly on temperature, humidity and velocity, and for its measurement an instrument called the "Katathermometer" has been devised, consisting of an alcohol thermometer with a large bulb graduated between 100 deg. F. and 95 deg. F. In use the thermometer is warmed to a temperature in excess of 100 deg. F., and the time required to cool between the above ranges is measured. This figure divided into a co-efficient for each instrument gives the cooling power expressed in millicalories per sq. centimetre of cooling surface per second. The instrument can be used with wet or dry bulb; generally both observations are necessary.

Excessive cooling power is in most cases adequately met by clothing, but no such simple remedy is available for defective cooling power which, according to degree, has a pronounced effect on general health, on capacity for physical and mental work and is suspected of being an important contributory factor in silicosis. There are no means as yet of expressing the exact relation between cooling power and the physiological effect, and the table hereunder is the best that can be done at present to indicate this relation approximately. With regard to the capacity for physical work it may be mentioned that some fatigue investigations now in progress show an astonishing decline in output under conditions which cannot be described as infrequent.

Mr. Clifford then goes on to cite certain conditions which are stated hereunder.

Wet Kata cooling power in millicalories per sq. centimetre of wet surface per second.	
5	Extremely oppressive condition, inducing profuse perspiration; there is very little evaporation from the respiratory track, and a severe strain on the heat regulating mechanism.
10	Oppressive.
15	Lower limit of satisfactory conditions unless no physical work is being done.
20 25	Best conditions, the higher figure necessitating a fair amount of clothing or the performance of physical work.
30	Upper limit of satisfactory conditions; induces a feeling of cold and danger of chill unless the body is well clothed or physical work is being done.
35	Uncomfortably cold unless hard work is being done or winter clothing is worn.
40	Heavy winter clothing necessary.

This table is a rough approximation and is subject to reservations, some of which may be mentioned here. For instance, if certain of the components such as high air velocity or excessive dryness are extreme, the conditions may be unhealthy, notwithstanding a satisfactory wet cooling power. Further, the amount and condition (i.e., wet or dry) of the clothing profoundly affect the cooling power of the air on the body, even if there is only one thickness such as is usually worn by white miners on the Rand.

So much for the statement of the problem; let us now consider the remedy.

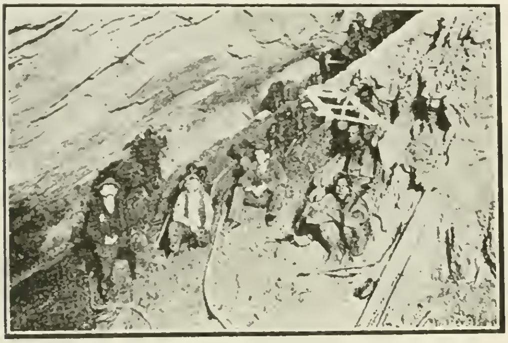
Conditions in Witwatersrand Mines.

As mentioned previously, a prevailing condition of the air in the underground workings on the Rand is saturation, and in view of the vital necessity of allaying siliceous dust by the copious use of water, and the absence of a practical alternative, it appears that we must accept this as a permanent condition. Belger's Fluid, a hygroscopic mixture of calcium chloride and glue, has a useful application in special circumstances, but it cannot be applied to the general purposes of dust allaying.

With regard to velocity, it is a matter of common experience, fully borne out by " Kata " observations, that slight variations in velocity have, under certain conditions, a considerable effect on the cooling power, more particularly on the naked body. Such cooling effect is highest when both temperature and humidity are low, and least when the temperature approaches the body temperature and humidity the saturation point. When these two latter conditions occur together the cooling resulting from air velocity vanishes.

Unfortunately, extreme conditions are apt to be present in the same mine, the former in the main intake airways close to the shaft and the latter in any extensive open workings away from the shaft, and if velocity is adopted as the means to improve the one condition it may have the opposite effect on the other.

It is clear that in mines such as those of the Witwatersrand, where the open workings are very extensive, the ordinary intake and return system of ventilation is not generally adaptable as a means of utilising air velocity for cooling power. This, as a rule, could only be done by means of subordinate systems having in view simply the stirring up of the air as distinct from circulation, a process presenting many difficulties in its practical application.



Deep Mining on the Rand.

The conclusion from the foregoing discussion is that little or nothing can be done with regard to humidity, that velocity as a cooling power, though it should be made use of wherever possible, has, in practice, rather serious limitations, and that we must therefore place our chief reliance on the remaining factor, temperature.

Any ventilating current must abstract some of the heat from a mine by virtue of the specific heat of the air, and if water is present in the workings, by its evaporative power. The quantity of heat so abstracted would depend in general on the difference between the initial and final temperatures and absolute humidities.

The supply of heat to the air current is derived from the rocks, from men, animals, illuminants, water and explosives, from electric power used underground and also, in some instances, from chemical change, this last being a negligible factor on the Witwatersrand. In order that a reduction in air temperature may be brought about, the quantity of heat removed by the air current must be greater than the quantity of heat supplied to the air current, and that this may be done the important points to attend to are, quantity of air in circulation, initial temperature and initial moisture content.

The Case of the City Deep.

It was considered that for the particular case of the City Deep, the heat absorbing power of a large volume of air was adequate to bring about a general reduction of the mine temperatures, and discussion of the principles involved in this method will be made later, but brief reference may here be made to the reasons for not cooling the intake air by refrigeration, a method which has been adopted in one deep and very hot mine. Perhaps the chief objection is the very expensive equipment required when the quantities of air are large, and in order to take full advantage of the velocity factor in the cooling of the human body, the quantities should be large. Doubtless, a small mine situated in a hot, moist climate would find refrigeration a satisfactory method and perhaps the only means of overcoming the difficulty, but at the City Deep the opposite conditions prevail—the mean surface temperature being 60 degrees F., the relative humidity 56 per cent., the quantity of air available for cooling 420,000 cubic feet per minute, and the number of men underground about 6,800. The increase in the drying power, one of the chief objects of refrigeration, would not under these conditions commence until the temperature had reached 44 degrees F., and would only become a considerable factor when the temperature has been reduced to 32 degrees F. For such a large quantity of air as the above this would involve a costly equipment. It may be mentioned that the adoption of this principle would also entail air-tight doors at the top of the downcast shaft, which are cumbersome and inefficient, and an underground refrigerator is scarcely practicable on account of the difficulty of taking the abstracted heat out of the mine.

Five Thousand Feet Below Surface in a Rand Mine.

As the problem is one of temperature only, the first consideration that must be satisfied is that the quantity of heat flowing from the rocks and all other sources to the mine air must be less than the quantity of heat that the ventilating current can abstract from the mine as a whole, a quantity depending in its turn on the specific heat of the air and its evaporative power.

Mr. Clifford then goes on to give a highly technical example of the principles involved, the data being obtained from the City Deep.

" The above calculation," he continues, " is based on the assumption that the fan runs at its full capacity of 420,000 cubic feet per minute, and it shows that this quantity is ample to cool the mine as it exists to-day to the required extent. It can also be shown that the surplus cooling power available will be sufficient to offset the growing extension of the mine for a long time to come.

At present the fan is run only at about half its capacity, but when the new shaft is completed the quantity in circulation will be largely increased, the greater part of the supply, namely, about 300,000 cubic feet, being caused to travel through this shaft. Of this amount, some 75,000 cubic feet per minute will be required to cool the electric winder and converter sets at the seventeenth level station, the remainder being directed through the lower shaft to the bottom workings.

Theoretically, no condition of absolute stability will be reached. For many years to come the mine will continually become cooler, though at a diminishing rate, until ultimately the extension of the workings brings about a reversal of the process—assuming, of course, the quantity of air in circulation and the other conditions to remain the same.

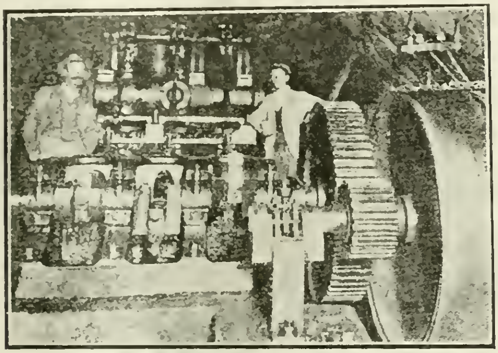
Difficulties will probably arise in regulating the cooling. This, indeed, has already been found to be the case, but especial provision made at the outset would certainly minimise these.

As the air rises through the workings it expands, becomes supersaturated and condensation of moisture takes place, making all the rock surfaces permanently wet. Except that it means a short life for timber, this is a beneficial result, not only in preventing the dissemination of dust from rock surfaces but in actually eliminating a large proportion of the dust from the air, a rather interesting example of the well-known meteorological phenomenon."

Some Interesting Observations.

The paper then gives a table of observations made during December, 1920, selected to indicate the condition obtaining at the City Deep, and says of these that the first five observations were made in the intake air close to the shaft, and one of the most important points to notice is the great increase in humidity in the air during transit down the shaft. As previously mentioned, this is a timbered shaft, kept permanently wet, a condition which robs the air of a great part of its heat-absorbing power before it properly enters the mine.

When the south shaft is connected to the seventeenth level the air will reach the workings with no increase in absolute humidity, and its cooling power fully preserved.



IN A RAND DEEP LEVEL.

In spite of the above disadvantage, the cooling powers in the incline shaft, which is the main airway, are quite satisfactory, and even the seventeenth level east, though a "dead end" and 4,500 feet below the surface, is not particularly bad.

Observation 21 on the fourteenth level west: This is an important airway, and the cooling power is excessive on account of the high velocity.

The conditions at the higher levels remain fairly constant, showing that, in this instance, the cooling due to expansion and the lower rock temperatures compensates for the increase in humidity. Just before entering the ventilating shaft the air becomes super-saturated and foggy.

The observer's remarks agree tolerably well with the wet Kata readings, but they are always influenced by the condition he experienced immediately preceding the observation. For instance, in dry clothes before going down a cooling power of 32.8 does not strike him as cold, whereas after travelling through workings where the cooling power averages about 15, and probably sweating, the fourteenth level west, with a cooling power of 27.6, feels cold.

Varying Conditions.

In other mining districts where the temperature problem has become serious the methods which have been adopted or proposed for overcoming the difficulty differ materially from that described above. In most cases it appears that little or no attempt is made to reduce the temperature of the air, but great trouble taken to keep it dry, and, in at least one instance, this is supplemented by refrigeration.

The climatic conditions of the locality and the nature of the mines themselves vary to such an extent that no single process or method would suit all circumstances, but so far as the writer has been able to discover it has not been appreciated in some instances that, on the one hand, the flow of heat from the rocks is by no means infinite; and, on the other hand, that the heat-absorbing power by evaporation may frequently be a very large quantity. This latter is obviously a minimum in a moist and tropical climate, and at its best in a cold climate. The writer made casual reference to the subject some time ago in regard to the paper by Sir William Garforth in "The Transactions of the Institute of Mining Engineers." One gentleman, in reply, stated that although the method might be practicable with the dry atmospheric conditions of the Transvaal, it would be useless in England, where the air is frequently saturated. Whether it would be practicable or not as applied to an English colliery, the writer is not in a position to judge, but the reason given is certainly invalid, as the atmospheric condition in this respect is not materially different in England from that prevailing in the Transvaal.

By way of further illustration, a case may be quoted where the mine air temperature reaches 110 degrees F., the relative humidity being extremely low. This condition may be bearable, but it is cerainly not good, as the air is at a higher temperature than the body, and therefore the cooling power has to be effected entirely by evaporation, calling for excessive work of the sweat glands. One cannot help thinking that a judicious use of water sprays would simultaneously achieve an improvement of the atmospheric condition, and, by virtue of the great evaporative power of the air, a pronounced cooling of the mine.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES *vs.* **BAR FRAMES."**

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Coal Economics.

JANUARY OUTPUT ESTABLISHES ANOTHER SOUTH AFRICAN RECORD IN VALUE.—NATAL PITS RAISE THE PRICE BY HALF A CROWN PER TON.—INQUIRIES OF THE ANTI-PROFITEERING COMMISSION.

In January the Union's coal output had a sales price at pithead of £465,764, which is the biggest value ever secured in any single month for the fuel output of the country. Statistics relative to this return and a summary of evidence given by Messrs. Roy, Pott and Panchaud before the Board of Control under the Profiteering Act are given below.

Despite the competitive influence of overseas collieries in the Southern Hemisphere which has been rendered possible largely on account of low freight charges, the coal output of the Union for January was a record from the point of view of value at pit's mouth, although the tonnage produced was 53,000 tons less than the amount raised and sold in December. This increase was largely due to an increase of over £18,000 in the Natal output, although the tons sold were 30,000 less. The value at pits' mouth was raised by over half-a-crown per ton to 15s. 6d., which compares with 10s. 7d. for the year 1919 and 5s. 5d. per ton a decade ago.

The Garden Colony is evidently finding that sugar and Natalite are not the only profitable things on earth!

The Transvaal output for January was 23,000 tons less than in December, but the selling value advanced from 6s. 7.05d. to 7s. 0.11d., with the result that the total value improved from £206,585 to £211,781.

More Coal Evidence.

Evidence in regard to the coal industry continues to engage a great deal of attention, and as a respite from the statements made before the Coal Commission we have, during the week, had an inquiry into coal economies by the Board of Control under the Profiteering Act. The inquiry was held with reference to the price of coal, following a statement, emanating from Pretoria, which had been led before the Board. Mr. John Roy, Chairman of the Transvaal Coal Owners' Association, and Messrs. H. G. L. Panchaud and W. Pott, representing the Witbank and Tweefontein Collieries respectively, were called upon to give evidence. Mr. B. H. Friel, of Messrs. Webber, Wentzel and Friel, attending in a legal capacity for the Association.

Mr. Roy's Evidence.

Mr. Roy's examination lasted for some hours, during which he explained the formation, constitution, and present attitude towards the coal trade of the Association, which he described as merely a co-operative society formed for the purpose of increasing production; but retaining no profits made, while losses were discharged by the colliery members. The collieries had agreed to market their product through the Association, taking their percentage of trade secured by it, the prices being fixed in accordance with the calorific value of the coal, the geographical position of the mine with reference to railway facilities and other details.

He produced a statement which showed that a very large number of collieries had made no profits during periods ranging from three to 14 years, and some had not declared a dividend yet.

In reply to the Chairman, he attributed this to the fact that the output had, save for a few months last year, been always in excess of the demand, and there was no country in the world, with the probable exception of India, where the price of coal was so low.

The Association appointed distributors in various districts, and he held that the system was to the ultimate advantage of the consumer. If a distributor was neglecting the business or overcharging the consumers, the Association would replace him for the benefit of the community. He accounted for the steady rise in the price of coal by the increased costs that were mainly borne by the distributor, the principal being fodder and wages.

Coke Ovens at the St. George's Property of the Dundee Coal Company.

The increase at the pit's mouth was comparatively small, but had it not been for that several of the poorer collieries would have had to close down. He placed the increase as about 70 per cent. all over.

The witness was very closely questioned by the Chairman, and later by Mr. Kayser, as to why coal was quoted at 10s. pit's mouth in Pretoria and 12s. 6d. in Capetown, while the railway charges in the latter—about 23s. per ton—were so much heavier. The questioners considered this in the nature of an anomaly, but Mr. Roy held that the farther away from its source the more valuable did the article become, and the delivered price was the criterion of its value.

The Chairman stated here that evidence had been received by the Board that as much as 55s. per ton had been obtained by retailers in Durban.

WOLHUTER.

The report of the directors of the Wolhuter Gold Mines, Ltd., for the quarter ended 31st January, 1921, states: Total development footage, 862 feet; total footage sampled, 680 feet. The payable reef disclosures were as follows: Main Reef, 46 feet; reef width, 16 inches; assay value, 22·8 dwts. Main Reef Leader, 207 feet; reef width, 59 inches; assay value, 9·1 dwts. South Reef, 98 feet; reef width, 20 inches; assay value, 18·6 dwts. Pyritic lode, 89 feet; reef width, 58 inches; assay value, 12·8 dwts. Working revenue, £139,973, equal to 29s. per ton milled; working costs, £112,298, equal to 23s. 3d. per ton milled; working profit, £27,675, equal to 5s. 9d. per ton milled; sundry revenue, £142; total profit, £27,817. The 23rd ordinary general meeting of shareholders will be held in the board room, second floor, The Corner House, Johannesburg, on Wednesday, 23rd March, 1921, at 12 noon.

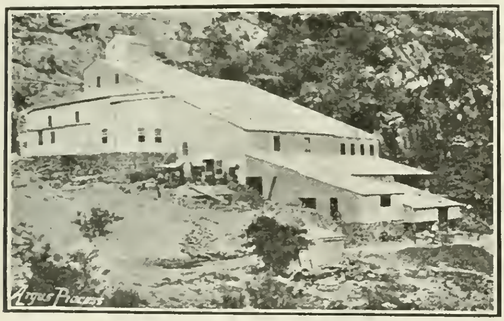
Falling Tin and Copper Outputs.

SOME DEPRESSING STATISTICS.—THE ZAAIPLAATS COMPANY'S EXPERIENCE.—LEEUWPOORT SUSPENDS PRODUCTION.

Base mineral enterprises in South Africa are feeling the pinch of falling metal prices severely and although the tin output of the Union for January had a value of £9,324, as compared with £5,511 in December, it should be pointed out that the December sales and shipments were 24.1 tons of 99.63 per cent. metal contents against 61.6 tons of 86.5 per cent. content for January and that no copper ore at all was sold or shipped during the month.

The precarious condition of the tin industry in the Union is well instanced in the Zaaiplaats report, which states that during the quarter ended 31st January, 1921, the mill ran 23 days on 76 days during the quarter, crushing 3,359 short tons, the duty per stamp being 9.7 per 24 hours. The output for the quarter, including the Valley Alluvial, amounted to 76 long tons of concentrates, assaying 70.54 per cent. metallic tin. The results of working show an estimated loss for the quarter of £2,220 before providing for directors' fees and Government taxes. For a considerable time past, viz., since May, 1919, tin on hand has been taken into the accounts at £210 per ton. The serious drop in the price of the metal has, however, necessitated a revision, and, in order more accurately to reflect the financial position, tin on hand in all forms has now been taken into account at an average of £135 per ton, and, as a result, the accounts will show a further loss of £2,282. During the quarter 72·25 long tons of refined tin, assaying 96·6 per cent. metallic tin, was produced by the smelter.

The report continues: No. 13 Section: Development has not led to the discovery of a permanent body of payable ore. The high-grade ore discovered in No. 5 Branch at the beginning of the quarter pinched out. A number of promising indications are being followed in the belief that the ore body is not far removed from the present working faces.



View of Zaaiplaats Mill and Dressing Plant.

Cross-cut Ore Body: Poor ground was encountered in the upper section. The lower extension has been carrying payable tin throughout the quarter. Government Lease: There was a further diminution of output from the main workings. The ore body has been disturbed by a number of transverse faults which appear to have some connection with the reduction in value. At the end of the quarter more settled conditions prevailed and the ore body showed signs of recovery. During the quarter 3,803 tons of ore were mined and disposed of as follows:—Waste sorted, 444 tons; sent to mill, 3,359 tons.

Valley Alluvial: Work was suspended temporarily owing to bad weather conditions and shortage of labour. It is hoped to start work again on this section at the commencement of the dry season.

Drastic Reductions.

During the quarter the fall in price of tin was approximately £100 per ton, and from February, 1920, £220 per ton. When the price dropped below £200 all hope of carrying on the mine profitably under present working conditions and with the existing scheme of operations was at an end. The directors gave the matter very earnest consideration, and resolved that every endeavour should be made to continue working operations at the mine. The manager has submitted a scheme to carry on important developments in No. 13 and No. 6 Cross-Cut while recovering ore from all sources to cover working costs. This scheme, which has been approved by the directors, unfortunately entails drastic reductions in the personnel and in other directions, but it is hoped that it will enable essential development to be carried on without loss until such time as a recovery in the price of tin warrants carrying on operations to the full capacity of the mine.

Stavoren.

During the quarter developments were very similar to those previously reported. Several new prospects were discovered. Up to the present the work at Stavoren may be considered to have been very successful, and at the present time the " ore at grass " amounts to approximately 1,000 tons and the " ore in sight " to approximately four to five thousand tons. This would be of very great assistance to the company at the present time if milling operations could be started. Unfortunately practically no rain has fallen at Stavoren since November, with the result that there is very little water in the conservation dams. The rains at Stavoren are usually late and it is hoped that the position in this respect will shortly be improved.

Leeuwpoort Suspending Milling.

As a further indication of the unsatisfactory state of the tin position, the directors of the Leeuwpoort (African Farms) Tin Mines, Ltd., desire to inform shareholders that, in view of the recent heavy and consistent fall in the price of the metal, involving as it does production at a loss, it has been decided to cease milling operations temporarily in order to conserve the financial resources of the company. The development underground, which has been consistently good, will be proceeded with, and it is also intended to take the opportunity of treating the 10,260 short tons of low-grade concentrates, which have been accumulated for some time past. It is hoped that it will not be long before the price of the metal recovers to a reasonable figure, and the directors will recommence milling operations at the earliest possible moment which they consider consistent with the interests of shareholders.

WATER PURIFICATION.

Mr. Andrew F. Crosse, the well-known chemist and metallurgist, of this town, has recently been recommending a method of clarifying muddy water which has given unqualified satisfaction to those who have employed the system. The manager of the Clydesdale Collieries, at Coalbrook, writes of this: We have now had a fairly lengthy trial of Mr. Crosse's method, and I wish to put on record my appreciation of the treatment recommended by that gentleman. As you are aware, we had trouble daily with our locomotives, the tubes and tube plates being a constant worry and expense to us, solely due to the water used. Since adopting the treatment recommended by Mr. Crosse that trouble has entirely disappeared. The cost of the treatment is infinitesimal compared with the advantage derived, being approximately 6d. per thousand gallons treated, exclusive of power, and the loss of water being 5 per cent. including the mud.

In connection with this, Mr. Crosse points out that the amount treated was small, therefore the cost is comparatively high as attendance has to be included if only for a short time. The water was exceptionally muddy, hence the bulky precipitate and loss of 5 per cent. of muddy water.

The Nickel and Talc Flotation.

VIEWS OF MR. ANDREW CROSSE AND MAJOR TREVOR.

Through the courtesy of the Chemical, Metallurgical and Mining Society we are enabled to give hereunder the full text of the remarks on this interesting proposition made by Mr. A. F. Crosse and Major Trevor at the recent meeting of the Society.

A Rich Nickel Ore.

Mr. Andrew F. Crosse (past president) said: I am going to bring to your notice this evening one of the most interesting mineralogical discoveries of recent years in the Transvaal. It is an extraordinarily rich nickel ore, and I can find no fitting description of it in Dana's Mineralogy or in a book—"The Nickel Deposits of the World"—published by order of the Legislative Assembly of Ontario (1917). I want you to look at some pieces of the ore, and also a bar of nickeliferous iron which I have here; it is probably the richest nickel alloy ever smelted direct from the ore, assaying about 52 per cent. nickel.

The analysis of a large sample of 76 lbs. was as follows:

	Per cent.
Oxide of nickel	40·30
Oxide of iron	49·30
Phosphorus	0·13
Calcium oxide	0·20
Silica	6·50
Loss on ignition, chiefly water	2·15
Loss	1·45
	100·00
Metallic nickel	29·6
Metallic iron	35·7
Platinum	0·2 dwt. per ton.

As there is no arsenic or sulphur in this ore it would prove very valuable for alloying with steel; 70 per cent. of the nickel produced to-day is used for that purpose.

I do not think that all the ore will be as rich as this sample, but it will be easy to concentrate either by a Wilfley table or magnetic separator, or the two combined. The specific gravity of this ore is 4·6.

This ore is, as far as I am able to judge, a new and undescribed mineral. If this should prove to be the case, I should like to call it "Trevorite," after Major T. G. Trevor, Mining Commissioner for the Pretoria District, including Barberton.

My thanks are due to Mr. Cottrell, Chief Assayer of the Standard Bank, for smelting the ore according to my instructions as regards flux.

I must not forget to mention where the new discovery of nickel ore comes from; it has been found close to the talc mines on the farm "Bon Accord," north of the branch line to Barberton, near the Sheba siding.

The company handling this ore is the South African Nickel and Talc Company.

An article on this ore, by Major T. G. Trevor, appeared in the *South African Journal of Industries*, June, 1920.

Major Trevor's Remarks.

Major T. G. Trevor (member) said: "I am sorry that I came unprepared with notes on this question, but I happened to be in Johannesburg to meet Mr. Crosse, who thought it might be of interest to members if I said something on the subject which he has just mentioned.

"In June last year I was informed that ore carrying about 27 per cent. nickel had been found in the Barberton district. I warned the people who told me about it to be careful, as there was probably a mistake. I went up and saw the deposit. When I was looking at it I said: 'For God's sake do not say anything about it because personally I do not think it is nickel. Wait until I get some check assays made.' I sampled the occurrence and found the check assays confirmed the original report. The deposit occurs on the Lily line in the Jamestown series just opposite the Sheba bridge. This line has been thoroughly described by Dr. Hall in his published memoir on the Geology of the Barberton Gold Fields. A bar of hard quartzite forms the ridge pole of a long line of hills. This line stretches for about 40 miles, making a distinct feature of the country for quite 20 miles. On the top of one of the hills in the ridge a man shot a buck and picked up a stone with which to despatch it. The stone was so heavy that he took particular notice of it and took it to the camp. That was how the actual discovery was made. The richest portion of the ore appears as a massive black rock composed of grains of magnetite closely cemented together with a slight green tinge, but without any banded structure. Mr. Crosse has given you the analysis of it. When I saw it the deposit was opened up by an open cut about twelve feet deep. I published a report on it in the *Journal of Industries* for June, 1920. The hanging wall was a very fissile sandstone which a geologist would describe as a 'philite,' the reef or deposit was 2 feet 3 inches wide, and a representative sample taken three feet below the surface gave an analysis of 17·2 per cent., while a similar sample taken of a 1 ft. 3 in. footwall gave 1·67 per cent. The dip was approximately vertical. Since my visit an adit has been put in which has struck the reef, and the reef is now being driven on. Assays varied from 3 per cent. to 27 per cent. It was at once obvious that this ore was something entirely different to anything of which we had records, so I sent several samples to England. Of the main sample sent to the Imperial Mineral Resources Bureau I have not had a report, but from other sources I learn that the ore, owing to the entire absence of sulphur in it would be of great value to smelt with sulphurous ores. As to the quantities in which this ore occurs, it is at present premature to say anything except that you have a definite outcrop for about 300 feet, assaying anything from 3 per cent. to 27 per cent., also that on the same line 1,500 yards to the east the whole talc deposits are saturated with traces of nickel. In the main talc mine there are traces of honeycombed limonite, which are so porous that they will float on water for quite a considerable time before sinking. I had some of this assayed by Dr. Moir, and it gave a result of 2·7 per cent. nickel. It is therefore obvious that there is a very considerable area in this locality which is impregnated with nickel and that the prospects of it developing into an important nickel mine appear to be extremely good. I must thank Mr. Crosse for the unexpected compliment he has paid me with regard to the name, which I accept. It is not particularly euphonious, but that is not his fault."

It should be made clear that the nickel contents of 51·4 per cent. referred to in our last issue was the nickeliferous content determined by assay of a bar of nickeliferous iron.

The Smallest Electric Motors.

The making of very small electric motors is quite an art in itself, and hitherto it has not been very largely pursued in Great Britain. To a large extent these tiny machines, which range from one-fiftieth of a horse power up to one-quarter or so, are used for driving small domestic labour-saving appliances, such as suction cleaners, washing machines, plate polishers, and so on. The demand for such appliances originated in the United States, where the combination of a high standard of living with the absence of domestic servants was first experienced. Latterly, however, a similar state of affairs has made its appearance in Great Britain, where a considerable business in electrical appliances for the home has resulted. Following this development, a British firm which recently took up the complete manufacture of electric vacuum cleaners has extended its operations to the smallest motors, driven from the electric light circuits. Great skill has been exercised in overcoming the difficulties of building miniature motors of a robust and efficient character to run at a high speed without vibration, but these difficulties have been surmounted on mass production lines. This is only one of the many directions in which British electrical manufacture has recently extended its enterprise to cover fields previously identified with its foreign competitors.

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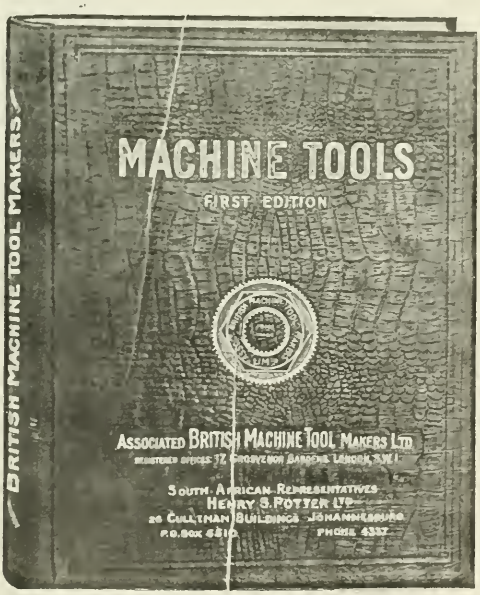
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Reliable Aeroplane Engines.

It is well known that "engine trouble" has been the most frequent source of accidents and delays in aeroplane services, and that designers in all countries have vied with each other to make the aeroplane engine more and more reliable. Exhaustive tests made recently on a British aeroplane engine show how far at least one British firm has succeeded in this quest. This engine, which is of 450 brake horse power, was run continuously for fifty hours and was subject to a further five hours' trial for speed and power. During one hour it was run at a speed of 2,300 revolutions per minute, and for the remaining four hours it developed a considerably higher horse-power than the figure for which it was designed. For one hour its output was 532 horsepower at 2,225 revolutions per minute. At the conclusion of these strenuous trials the engine was in perfect condition and ready for further service.

* * * *

Improved British Rolling Stock.

The "underground" transport system in London, which comprises electric tube railways, motor omnibuses and electric tramways, is acknowledged to be one of the most efficient and progressive in the world. Since the conclusion of the War it has given large orders for improved omnibuses and railway rolling stock. The new omnibuses have a seating capacity of 57 and are the most capacious vehicles for their weight in service in any city. Every detail of the structure has been designed to provide strength with lightness. On one of the tube railways 100 new cars are being put into service as fast as they are delivered by the British makers. They are larger than the previous cars and are designed for easier riding, the bogies being larger and the springing arrangements improved. The electrical equipment is more powerful, giving more rapid acceleration and a speed up to 45 miles per hour on "non-stop" runs. A larger number of doors are provided so as to facilitate loading and unloading at stations. With these cars, eight to a train, the company expects to handle the heaviest rush traffic at record speed.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180, Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.
Telephone **913**. P.O. Boxes **963** and **4573**.
Cable and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

THE DIAMOND DEBACLE.

For several months past clouds have been banking up on the horizon of the diamond market, and during the past few days the storm has broken with a vengeance. The period of unexampled prosperity which made diamond mining and selling a highly lucrative business began to show indications of breaking about the middle of last year, and although there have been occasional signs of recovery, the state of the trade has steadily gone from bad to worse, and the country is now face to face with a very serious position. The great selling syndicate who control the gem market declares that diamonds are to-day practically unsaleable, and in consequence of the evil days upon which the trade has fallen, the De Beers Company are closing down the Wesselton and Kimberley Mines, and the Premier Company is working on one shift only. These decisions mean the "laying off" of 750 men, and as retrenchment on a smaller scale had taken place before these wholesale dismissals were announced, the number of men recently discharged by the big mines alone must fall but little short of a thousand.

Simultaneously it has been decided to close down the Frank Smith Mine, the New Eland, the Roberts Victor and the Postmas Prospect, and the Theron Mine is suspending washing operations. These are lesser satellites in the diamond firmament, but quite apart from the large amounts of money which have been lost by the public through speculation in these enterprises, it will be clear that cessation of work at these mines too will tend to increase the number of unemployed.

On the alluvial diggings of the Transvaal and the Cape the number of white men at work has declined from 13,368 in May of last year, to 5,636 at the end of January, so that taking everything into consideration, it would appear that the collapse of the diamond market has meant that ten thousand people, directly dependent on this fickle industry, have been deprived of their livelihood.

Whilst signs of a very severe slump in the gem market have not been lacking for a long time past, the tragic decisions of last week fell upon the community like a thunder bolt. General Smuts had no inkling of the heavy blow that was to be dealt Kimberley and the Premier Mine, and he knew nothing of these momentous decisions until he saw the announcemens in the columns of the daily Press.

The disastrous effect retrenchment will have on the problem of unemployment is but one aspect of this subject; there are numerous other considerations which are at least worthy of mention.

There is, for instance, the matter of share market depreciation. In the last few months the stock of De Beers has fallen from £33½ to £10, and other prices have declined proportionately. Millions of money have been lost by speculators and investors, and, of course, millions have been correspondingly made by those who have had inside information, who bought diamond shares two or three years ago, when the market showed signs of buoyancy, and who sold "short" at the first indication of a break in the upward movement.

This, of course, is all part of the Great Game of Buy and Sell which can be played more successfully with the capricious diamond market than with anything else under the sun. Diamond shares at the moment are very much in the dumps, and the heavy fall in this class of stock during the past few days has depressed the market generally.

Gold scrip has been heavily realised, and there seems to be at work a general conspiracy of circumstances which may have as its ultimate object the purchasing of former enemy shares at bargain prices.

The recent severe slump in brilliants has been due principally to world trade tendencies, and particularly to such circumstances as restriction of credit and curtailment of universal extravagance.

It seems, indeed, that for the time being those two ephemeral factors of purchase which are the mainstay of the world's gem market, "the vanity of woman" and "the depravity of man" have absorbed all that they are capable of absorbing, unless the foundations of the whole economic edifice upon which the diamond market has been built up—maintenance of a rare commodity price—is to be undermined.

Contraction of spending capacity is mainly responsible for this state of affairs, and in well-informed circles the idea is scoffed at that recent experiments in Germany, which, according to reports in the European Press, have resulted in the artificial manufacture of brilliants, have been in any material degree responsible for a fall in price.

Reports of the development of new diamond fields, particularly in the Congo, seem to be worthy of more serious consideration than the Berlin and Hamburg synthetical achievements. As instancing the importance of these fields, it is interesting to note that the Belgian Minister of the Colonies has decided to open an office in Antwerp for the Miniere Company, which mines diamonds in the Congo on joint account with the Government. By this means diamond merchants will be enabled to obtain rough diamonds without resorting to intermediaries.

It is also to be noted that the output of the great Forminiere Belgian-American Company reached 245,000 carats last year. The Forminiere is thus materialising its intention to increase its production by 10,000 carats yearly. It seems clear that the Congo Belge is becoming a gem producer of some importance, and it remains to be seen whether its output, which, until recently, had not affected the diamond market to any marked degree, will have an influence on selling prices in the years to come. As an instance of the growing importance of Congo diamonds, it may be pointed out that the following cable from London appeared in the local Press the other day: "The conditions of the diamond trade have not improved and business is practically non-existent. A rumour has been in circulation that a stock of Congo Diamonds, totalling 140,000 carats, now being offered in Brussels, would be disposed of at about 40 per cent. below the syndicate's prices. As only a small proportion has been sold, it is understood, instead of the reduction suggested materialising, that prices have been maintained at former levels. This action has quite heartened the trade, and indicates that solidarity exists."

Whilst production of gem stones in the great Belgian dependency is evidently becoming a factor of some moment we attach far more importance to the fact that world trade and financial tendencies all point to a curtailment of spending capacity particularly on articles of luxury. And as a contributory cause of the present debacle the idea is held in some well-informed quarters that the realisation of vast quantities of jewels by the former aristocracy of bankrupt European States has largely helped to make diamonds unsaleable and diamond scrip a glut in a weak share market.

Mining Notes & News.

The Island of Yap.

The turmoil and topsy-turveydom of Europe seems to go from bad to worse, and it is hard to find any solace in the latest cables advising that the Allies have rejected the German counter proposals at the great Peace Conference, that the new Republic of Georgia is being assailed by Soviet Governments, and that a big struggle is coming between Labour and Capital on the issue of the general reduction of wages. Really one does not know what to believe of the world to-day, and the local cable service does not assist one much in an endeavour to find out what is going on. It is, for instance, difficult to ascertain whether Germany has offered to pay £7,500,000,000 or £1,500,000,000. The difference between these two cabled statements is after all only six thousand millions sterling, and in these extravagant times such a sum is probably hardly worth worrying about. As to the new world we gather that the island of Yap is causing trouble. Yap, it seems to us, is not confined to any particular piece of land surrounded by water. The trouble is that there is a whole world of Yap, and until the two-footed inhabitants of this neurasthenic earth of ours get busy and put in a few full-time shifts of work—and some overtime, too—Yap will continue to impede human progress.

* * * *

Natal Coal Prices.

We learn that the price of bunker coal at the port of Durban has recently been raised to 70s. per ton, and the pithead value 30s. per ton in the case of some of the Natal collieries. These are after all only what is termed world prices, but in view of the competitive influence of coal from the United Kingdom, which is now again asserting itself in the Southern Hemisphere, there is a suggestion to decrease the price by 10s. per ton. What decrease will be effected largely depends on the action of the railways, and in regard to freight charges we understand that the Natal coal owners are now debating the vexed question of railway carrying charges with Sir William Hoy's Administration, and the result of these negotiations may have an important influence on the determination of future coal price at Port Natal

* * * *

The End of the Village Main.

At ten minutes past four on Monday, February 28, the hooter of the Village Main Reef sounded for the last time in the old mine's history. As the hour of "knocking off" approached a little group, composed of a few of the old employees of the company still remaining on the property, and who finished up on that day assembled at the siren. When the hour arrived the siren string was grasped by Mr. George Beynon, the employee with the longest service present, who gave a long hoot, holding the sound for a special space of time to mark the passing of a good mine, while those assembled bowed their heads. The toast of "The Old Village Main Reef: Good rest to her!" was then solemnly drunk by those present, who then dispersed. The Village Main Reef G.M. Co. was registered in November, 1890, crushing commencing in January, 1892.

* * * *

Diamond Mines Closing Down.

In view of the unsatisfactory state of the diamond market, and on account of the disappointing results secured by the washing plant, the Frank Smith mine is being closed down. It is also announced that the New Eland, Roberts Victor and Theron Diamond Companies are suspending washing operations. The outlook in the gem market appears to be just about as gloomy as it possibly could be at the moment.

* * * *

Daggafontein.

We understand that operations are being suspended at the Daggafontein Gold Mine.

Concerning Mines and Men.

The following certificates were issued by the Mines Department during the month of February, 1921:—Mine Managers (Metalliferous Mines): D. Y. Calderwood, E. E. A. de Kock, J. H. A. Diering, N. W. Graham, G. C. Jones, B. A. D. Kinahan, G. W. Lyddon, H. S. McAlister, F. A. C. Moore, M. Morisse, E. W. Seeman. Collieries: H. S. Macgregor, A. C. Wallbridge. (Non-fiery Collieries): R. G. Else, J. Gemmell, D. K. Lawrie, A. Smith, W. Watson. Mine Overseers (Mealliferous Mines): C. H. Luja, Collieries: D. R. Campbell.

MECHANICAL SHOVELS, ETC.

It is interesting to note that a variation in the mode of carrying a steam navvy has been introduced recently by Messrs. Sir. W. G. Armstrong Whitworth & Co., Ltd., for some excavation work in the West End of London. In this case the appliance is mounted on a caterpillar tractor, and is driven by an engine of 45 horse-power. Although the treads of the caterpillar-bands are smooth, so as not to damage the roads, the contrivance is capable of climbing gradients of 15 degrees. It is also fitted with a hauling drum and a wire rope, by means of which it can haul itself up inclines of one in four. The weight of the machine is 20 tons, the overall length 20 ft., and the width 10 ft. The shovel can lift three-quarters of a ton of earth at each stroke from a depth of 14 ft. below, and deliver it at 18 ft. above, the surface on which the tractor is standing. Owing to the difficulty of carting away the earth fast enough, the output is usually limited to 300 tons per day of eight hours, but the navvy is capable of lifting 60 tons per hour.

* * * *

Russian Orders for Britain.

In anticipation of the trade agreement between Great Britain and Russia many important contracts were signed for goods to the value of hundreds of thousands of pounds sterling. Among these contracts was one for the repair of Russian railway rolling stock.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

Forthcoming Meetings of Technical Societies.

Institute of Metals.—London March 9 10.

Geological Society of South Africa.—Johannesburg. March 11th.

Institute of Mining and Metallurgy.—Annual meeting. London. March 17.

American Society Mechanical Engineers.—Chicago, Ill. May 23-26.

Forthcoming Company Meetings.

Phoenix Gold Mine.—Nineteenth Ordinary General; 32, Bettelheim Buildings, March 8th.

Elandslaagte Collieries.—Twentieth annual general; Durban, March 17th.

Wolhuter.—Twenty-third ordinary general; Corner House, March 23rd.

Barrett's Rietfontein Syndicate, Ltd.—Ordinary annual general meeting; March 30.

Delagoa Bay Lands Syndicate, Ltd.—18th ordinary general; March 30.

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Transvaal Consolidated Land and Exploration Co.—26th Ordinary General, Corner House, June 15.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Engineering.

The Metering of Compressed Air.—Colliery Guardian, February 4, p. 338.

The Working of Single Lines of Railway.—The Engineer, February 4, 1921, p. 125.

Three High Plate Mill Plant.—The Engineer, February 4, p. 129.

Temperature Limits of Large Alternators.—The Engineer, February 4, p. 130.

Water Power Problems.—The Engineer, February 4, p. 127.

Structural Work and the Super Power Stations.—Steel Structures (quarterly journal of the Steel Structural Section, British Engineers' Association, January 21, p. 83.

Rapid Steel Building Construction.—Steel Structures, January 21, p. 95.

Iron and Steel.

Extensions to the South Bank Works of Messrs. Bolckow Vaughan & Co.—Iron and Coal Trades Review, February 4, p. 152.

Coal and By-products.

Coal Loading Facilities at Ports.—Iron and Coal Trades Review, February 4, p. 155.

Points in Sulphate of Ammonia Manufacture.—Iron and Coal Trades Review, February 4, p. 160.

Corrosion of Coke Oven Walls.—Iron and Coal Trades Review, February 4, p. 161.

The McKune Open-Hearth Port for Coke Oven Gas.—Iron and Coal Trades Review, February 4, p. 162.

Storage of Coal.—Mining and Scientific Press, January 22, p. 131.

Purification of Coal by Froth Flotation.—Colliery Guardian, February 4, p. 337.

Geology.

The Economic Aspect of Economic Geology.—Mining and Scientific Press, January 29, p. 161.

Mining.

Mining in Alaska in 1920.—Mining and Scientific Press, January 29, p. 163.

Pyrite in the Huelva District, Spain.—Mining and Scientific Press, January 22, p. 125.

Forthcoming Technical Society Meeting.

Geological Society of South Africa.

The twenty-fifth annual general meeting of members of the society will be held in the Main Hall, Scientific and Technical Club, 100, Fox Street (between Rissik and Loveday Streets), Johannesburg, on Monday, 14th March, 1921, at 8.30 p.m.

Latest London Quotations.

Latest price of gold, £5 6s. per ounce.

On the London Metal Exchange standard copper closed at £68 7s. 6d. for cash and £67 12s. 6d. for forward delivery; electrolytic copper, £73 cash, £75 forward; Straits tin, £159 15s. cash, £163 15s. forward; English lead, £17 10s. cash, £18 2s. 6d. forward; bar silver, 33d. per ounce.

Miscellaneous.

Lead Poisoning.—Mining and Scientific Press, January 29, p. 162.

Karl Eilers v. Guggenheims (text of the letter of Mr. Eilers).—*Mining and Scientific Press*, January 29, p. 166.

On account of pressure on space we are again compelled to hold over the second instalment of the article on "Progressive Vryheid."

Lightning Calculators.

The invention of calculating devices is a very fascinating occupation, in which British engineers have played a very active part. One of the commonest calculations which an engineer has to make is in connection with the sizes of pulleys and the widths of belt required to transmit a certain amount of power at certain shaft speeds. In order to assist engineers who have a large number of such calculations to make, a British firm has issued a circular slide rule by which all the details required can be ascertained with rapidity and accuracy.

ENGINEERING SECTION.

The Institution of Mechanical Engineers, London.

FORTHCOMING EXAMINATIONS IN SOUTH AFRICA.

The Council of this Institution has now decided to hold its examinations in South Africa, and it is proposed to conduct the first examination in October of this year, should a sufficient number of eligible candidates present themselves. As the examination system and the conditions for membership of this important institution may not be generally known, the following particulars will doubtless be of interest to our technical readers. There are four grades of membership, viz.: Member, Associate Member, Associate and Graduate, the qualifications for each grade being as follows:—

Extracts from the Rules of the Institution respecting Age, Qualification and Examinations.

Age and Qualification.

By-law 1, for Member.

1. No candidate who has not passed the qualifying examination for associate memebrship shall be elected a member, or transferred to the class of members, until he is 35 years of age; but a candidate who has passed the qualifying examination for associate membership may be elected or transferred to the class of members on attaining the age of 30 years. And every candidate for election or transference to the class of members shall produce evidence, to the satisfaction of the Council, either—I. That he (a) Has received a good general and scientific education; (b) Has been regularly trained as, or has had sufficient practical experience as, a mechanical engineer; and (c) Has been engaged for a sufficient period in an important position of independent responsibility in the direction of engineering work. Or II. That he has attained to a position of such eminence in the profession, or in the direction of engineering work, as to qualify him, in the opinion of the Council, for the distinction of membership.

By-law 2, for Associate Member.

2. No candidate shall be elected an associate member unless either (A) Being at least 27 years of age, he has passed the associate membership examination prescribed by the Council's examination rules for the time being or such other exempting examination as may from time to time be approved by the Council under such rules, and has also produced evidence to the satisfaction of the Council that he has been regularly trained as a mechanical engineer, has had sufficient practical experience in the direction or design of engineering work, and is following the profession of engineering, or (B) being 33 years of age or upwards, he shall have produced evidence to the satisfaction of the Council either—I. That he (a) Has received a good general education; (b) Has been regularly trained as a mechanical engineer; and (c) Has had subsequent employment for at least one year in a responsible position in the direction or design of engineering work, and is actually so engaged at the time of his proposal for election; Or II. That he (d) Has received a good general and scientific education; (e) Has had sufficient practical experience as a mechanical engineer; and (f) Has had subsequent employment for at least one year in a responsible position in the direction or design of engineering work, and is actually so engaged at the time of his proposal for election.

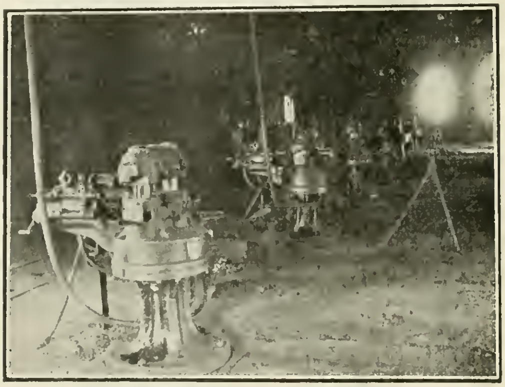
By-law 4, for Associate.

Associates shall be persons of at least 30 years of age, who not being mechanical engineers by profession, yet by reason of their attainments in science, or in any of the arts allied to, or having interests in common with, engineering, may be deemed by the Council to be worthy of the distinction of associateship.

Graduateship.

The qualifications requisite for graduateship are prescribed by By-law 3, as follows:—

"Graduates shall be persons not under 18 years of age, who have passed the graduateship examination prescribed by the Council's examination rules for the time being or such other exempting examination as may from time to time be approved by the Council under such rules, and shall satisfy the Council that they have received, or are receiving, regular training as mechanical engineers, and that they have received, or intend to obtain, sufficient practical and scientific training to fit them for employment in responsible positions as mechanical engineers. No person shall be elected a graduate after the completion of his 26th year.



Springs Mines Drill Sharpeners.

"A graduate may not remain as such if he ceases to follow the profession of engineering, nor in any case after the 31st December next succeeding the completion of his 28th year unless he has passed the qualifying examination for associate membership, and is not yet qualified for associate membership by experience and responsibility, in which case he may remain a graduate till the 31st December next succeeding the completion of his 33rd year."

Examinations.

Two examinations are held, viz., for graduateship and for associate membership. Graduateship Examination:—The subjects are as follows: I. General knowledge. II. Elementary mathematics. III. Scientific knowledge (two papers). (a) Elementary mechanics and one of the following: either (b) elementary physics, or (c) elementary chemistry. Candidates who have passed the matriculation examination of the University of South Africa are exempted from this examination. The graduateship examination may be taken at the age of 17 years or over by candidates who satisfy the Council that they have the intention of becoming graduates and that they have received, or intend to obtain, sufficient practical and scientific training to fit them for employment in responsible positions as mechanical engineers, with a view to becoming eligible for election as associate members.

Associate Membership Examination.

The subjects for this examination are: (A) General knowledge; (B) Scientific knowledge (two papers); (a) applied mathematics; (b) physics and chemistry; (C) Technical knowledge. Two papers selected from the following list of alternative subjects: (a) properties and strength of materials; (b) steam and the steam engine; (c) internal combustion engines; (d) hydraulics and hydraulic machinery; (e) electrotechnics, and design of electrical machinery; (f) theory of machines and machine design; (g) metallurgy. (D) Modern languages. One paper to be selected from the following list: (a) French; (b) German; (c) Italian; (d) Spanish Candidates who have obtained the degree of B.Sc. (Mechanical and Electrical Engineering) of the University of South Africa are exempted from this examination.

The associate membership examination may be taken: (a) By graduates of the Institution at the age of 20 years or over; (b) by candidates for graduateship over 20 and under 26 years of age who satisfy the Council that they have the intention of becoming associate members and that satisfactory arrangements have been made for their regular training as mechanical engineers; (c) by other candidates of 27 years of age or over, whose proposals for election as associate members have been sent in to the Institution and to whom the Council have granted permission to take the examination.

Briefly summarised, the condidations as to age are as follows:—(1) Candidates over 18 and below 20 can apply for election as graduates and take the graduateship examination. (2) Those over 20 and under 26 can apply for election as graduates and can take either the graduateship or associate membership examination. (3) Those over 27 can apply for associate membership and take the associate membership examination. While with regard to the examinations as already stated matriculated students are exempted from the graduateship examination and university graduates in engineering from both these examinations. Applications by candidates desirous of sitting for the examination in October must be in the hands of the Institution not later than April 1. The fees for the examinations are: Graduateship, one and a half guineas; associate membership, three guineas. Copies of the syllabuses and the necessary application forms may be obtained from Professor John Orr, University College, Johannesburg, who represents the Institution in these matters.

Structural Work and the Super-Power Stations.

A BIG STEP IN "POWER" ECONOMY.

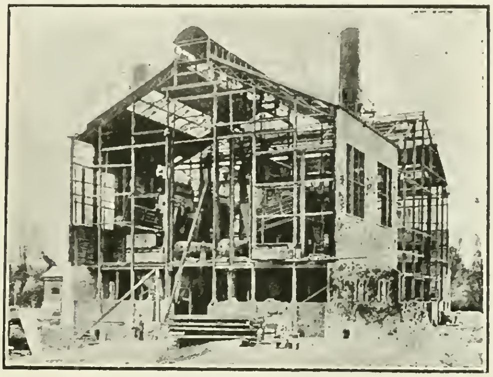
We take the following from "Steel Structures," the quarterly journal of the Steel Structural Section, British Engineering Association:—

Engineers have, for many years, understood what the public have only come to realise during the war years of terrible sacrifice and effort—that modern warfare is a combat of engineering, depending upon the brains of engineers and being waged in accordance with the methods they invent and apply—and the Great World War has vindicated the British engineer in every field. Thus the public eye has been focussed upon him, and he is now being relied upon to repair the damage caused by the recent orgy of destruction by the application of his genius, for the purposes of reconstruction, development and advancement.

It is, however, essential to ultimate success that there should be co-ordination of facilities together with the elimination of all waste effort, and the engineer has long foreseen that these requirements must operate at the source, that is, at the point where the energy is generated and from which it is distributed.

It is unnecessary to labour the point that high-tension current can be transmitted more economically than any other form of power. Energy can be generated near the pits, and that most potent form of railway congestion, due to the carrying of coal, can be absolutely eliminated. As example, consider for a moment the wastefulness of the present locomotive; magnificent mechanism as it is, it is, however, far from efficient as a prime mover, having to carry its fuel and water, as a camel carries its hump. Also how can money values represent in the smallest way the raising of health standards in the big industrial centres when chimneys shall have ceased to vomit smoke.

A case for this has already been established, and legislation has recently been before Parliament for unifying and concentrating the supply of electric current from super-power stations, which shall be placed at convenient centres and interlinked, for the supplying of large areas with necessary power.



SUPER-POWER STATION ON THE AVON.

Engineers will know that the compulsory provisions of the Bill were dropped, but they will hope that its principal virtues remain.

Whilst politicians have been talking, however, engineers have been working, and travellers approaching Leamington Spa on the Great Western line from Birmingham, may observe a large building which is being erected at Emscote Depôt on a site which practically touches and is level with the Avon. This is the first of the super-power stations.

The steel construction and erection in connection with this power station is being carried out under the supervision of the consulting and general contracting engineers, Messrs. Balfour, Beatty & Co., Ltd., of London, by the constructional department of the friends to whom we are indebted for the loan of the accompanying illustrations.

We would like to draw special attention to the large coal bunkers which are being erected in connection with this building, each of which has a capacity of well over 100 tons. As a matter of interest, we should like to relate that the bunker sides (20 ft. by 12 ft.) were dispatched from Norwich, riveted up complete, and that special arrangements were made with the Railway Executive for the purpose of transport.

One of the principal features of this building is its height and the long heavy plated columns which carry the bunkers. Considerable difficulty was experienced in getting these columns to the site, and there were three breakdowns on the railway during transport. These breakdowns were caused owing to the special type and weight of the work which was being carried.

In order that the power necessary for raising the feed and cooling water for the boilers and generators should be reduced to a minimum, the building was placed very low down, and one of the biggest difficulties experienced at the site has been with reference to carrying out erection during the flooding of the whole area on which the station has been built.

The building is so designed that when it is finished the sides and the ends will stand on concrete walls which will act as a dam to the river.

It should be noted that the present station is but a small beginning of what will be a very much larger station later, and that provision has been made for extending both the boiler house and engine room buildings—one side and one end of the present building being erected in such a manner that they can be moved out at a later date.

Perhaps there are few buildings in which every kind of constructional, contracting and general engineering work are so well represented as in this particular station now being described; and any firm responsible for the production of such a building must be so equipped that they can produce either a light hay barn or a heavy bridge, and not only produce them but be able to economically erect them.

The Institute of Transport.

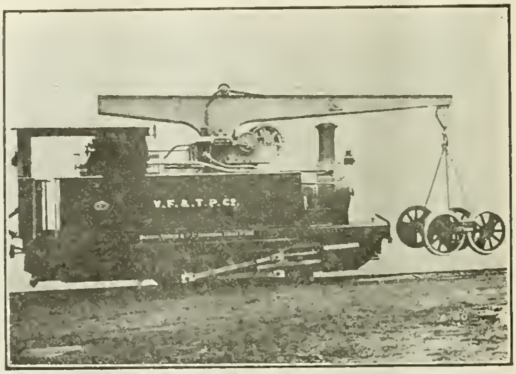
THE Institute of Transport held its first congress at Manchester on January 27th, 28th and 29th. Some hundreds of members attended the various functions, and before separating it was decided to form the first of the local centres of the Institute, that for the North-Western District, with headquarters at Manchester. Our valuable technical contemporary, "The Engineer," remarks of this Congress:—In addition to the reading of papers and discussions, visits of inspection were made to the Manchester Ship Canal, Trafford Park, the dock system of Liverpool, the train control system and school of signalling of the Lancashire and Yorkshire Railway, and the car shed and car-building works of the Manchester Corporation Tramways. Those who desired to do so were also given the opportunity of seeing the Anderton canal lift, the Stuart Street electricity station, a packing warehouse of Lloyd's Packing Warehouse Company, and the Lancashire and Yorkshire Railway electric line to Bury, and the Clifton power station. It was generally felt that in selecting Manchester for the first Congress an excellent choice had been made, as the district is one which illustrates to a greater extent perhaps than any other industrial area the development of the various transport agencies, rail, waterways and roads.

In the absence of Lord Ashfield, the President of the Institute, the Congress was held under the chairmanship of Sir Henry Maybury. Four papers were included in the agenda. Two of them dealt with various aspects of road transport. In the first paper Mr. C. le M. Gosselin traced the development of the mechanically propelled road vehicle. He expressed the belief that for loads of from 3 to 4 tons the electric vehicle would probably hold the field in future. Various combinations of steam and petrol and petrol and electricity were, he reminded the conference, being tested at the present time. He expressed doubts of the wisdom of the clearing house system in connection with road transport. The perfecting of machinery, training of staffs, the selection of the right type of vehicles to deal with the various classes of goods in the most efficient manner, and, lastly, the weaving of traffic together in a manner to permit of economical working were all elements outside the province of the Clearing House, but they had an important bearing on the development of road transport. In the second paper Mr. J. Cracroft Haller, the County Surveyor of Nottinghamshire, dealt with roads and road construction. The chief point made by the author was that it was a preferable policy to devote the available money and materials rather to the improvement of a large mileage of existing roads than the construction of a small mileage of new arterial roads. Mr. Haller referred to the inquiry made by the Departmental Committee of the Ministry of Transport, and said he had authority for stating that the report about to be issued would make the following definite recommendations as to weights and speeds. That the maximum weight of a traction engine shall not exceed 18 tons 10 cwt. when ready for the road, including fuel and water, and the maximum weight on the back axle shall not exceed 14 tons. If the traction engine is fitted with a crane or a driving drum, etc., the gross moving load shall not exceed 20 tons, and the maximum weight on the back axle 15 tons. That the speeds of two miles per hour through towns and four miles per hour in the country, which are the rule at the present time, shall not be increased. That the maximum weight of a heavy motor vehicle unladen shall not exceed 7 tons, as against the present 5 tons, and the weight on the axle 9 tons, compared with the present 8 tons.

The attention of the Minister of Transport had, said Mr. Haller, been directed to the need of a type of tractor that would fill the gap between the tractor and the traction engine, and the precise class of vehicle had been suggested by the Committee. Such a vehicle would have a maximum weight, when ready for the road, of 13 to 14 tons, with a maximum back axle weight of three-quarters of the total weight. Another paper by Mr. Smith described the construction and repair of locomotives at the Gorton works of the Great Central Railway.

Future of the Canals.

The waterways problem was the subject of a paper by Sir John Eaglesome, the general manager of the Aire and Calder Navigation. Dealing with the question of improving the canal system, the author dismissed the well-known "Cross" scheme put forward by the Royal Commission as unpractical and uncommercial, and suggested a more modest plan for consideration. It includes the improvement of the Birmingham system so that larger boats up to 100 tons might obtain access to a large basin near Birmingham, and the traffic be distributed thence by rail, road, or canal as might be most convenient. The other routes selected for improvement by the author were the Trent and Don Navigation. He considered it desirable that Nottingham should be served by 100-ton boats, and that craft of similar dimensions should be available to meet the requirements of Sheffield traders. Sir John put in a strong plea for State aid for canals. The only alternative was, he argued, public ownership. Just as the roads of the country were maintained by the community and put at the disposal of the public, so the canals might be maintained at the public expense, users paying



A Special 14 in. x 20 in. Outside Cylinder Side Tank Locomotive carried on four coupled wheels 3 ft. 0½ in. dia. wheel base 6 ft. 0 in., and suitable for a 3 ft. 6 in. gauge of railway. The engine is fitted with an overhead swing jib crane with a radius of 16 feet and capable of lifting a load of two tons. Every movement of the crane is independent of the locomotive.

tolls. The present was not, however, he realised, an opportune time for any proposals that might be regarded akin to nationalisation.

The discussion on these papers ranged over a wide field, that the main theme was the need for co-ordinating the various transport agencies. A point made by Mr. H. T Chapman, the surveyor for the county of Kent, was that, unlike railways, of which the permanent way remained under the control of those who impose the load, the road engineer was not responsible either for the axle load or the type of vehicle employed That road transport could be co-ordinated with railway working was indicated by the announcement that a special committee had been set up to consider the question of railways carrying goods by road. Something was heard from Mr. H Kelway Bamber on the subject of railway transport and high capacity wagons. He informed the Conference that arrangements had been made and the wagons were now being built for the regular carriage of 45 tons for coal transport between the Durham coalfield and London. No difficulty had, he said, been raised either by the coalowners or the consumer, and plans had been made by the latter—a London gas company for automatic delivery of the coal. The saving of time involved would enable far better use to be made of the new high capacity stock than of the wagons used under the old method of transport and delivery. Mr. H. H. Gordon, who has somewhat original ideas on road transport, commented on the fact that the existing custom was not to create new facilities for handling merchandise, but for the various transport agencies to filch traffic from each other. That, he insisted, was not progress. He made one practical suggestion in connection with road transport; he desired, he said, to see the minimum speed limit permissible to road vehicles raised, thus increasing the average speed of road motors and improving the efficiency of the whole system.

Those associated with canals were disposed to resent the suggestion that, in addition to being the cheapest, waterways transport was the slowest of the available agencies. Mr. Sidney Preston, the Chairman of the Canal Control Committee, insisted that it was not a question of the time in which the railways could dispatch and deliver goods, but of the actual period which elapsed between the handing of consignments to railway companies for transport and actual delivery. Judged by that test, the canal transport often compared favourably with the railways. One method by which the use of the waterways by traders might be revived, quite apart from any improvement scheme, would be for the canal companies to be carriers as well as toll takers. As Mr. Ross-Johnson pointed out, if water transport is to be a real competitor of the railways those engaged in it must have the power of organising and of instituting through traffic. Nothing could, however, he agreed, be done to revive canal traffic without State aid. Sir Joseph Broadbank, on the other hand, said he believed that all forms of transport should be self-supporting

Visits to Works.

The programme of visits proved a considerable attraction. Many features of interest were revealed during the inspection of Manchester Docks and the Ship Canal. Good progress is being made with the dock which is being constructed in the lower section of the Ship Canal, in which steamers with cargoes of petroleum spirit and other low flash-point oils may be safely accommodated. The oil is to be pumped from the vessels to installations that are being constructed by various companies on land adjoining the Canal. It is expected that this new depot will also be freely utilised for the bunkering of oil-propelled vessels. Arrangements have been made for the erection of two more transit sheds, each 450ft. long and 134ft. wide, on Trafford Wharf. These transit sheds will be fitted with electric cranes, and there is to be a subway for the conveyance of grain from the sheds to No. 1 elevator. Another development is a new warehouse with a storage space of approximately 54,000 cubic yards. This warehouse, which has a single floor 800ft. long, 200ft. in width, and 30ft. high, is now approaching completion. An important addition to equipment now projected is a floating crane with a lifting capacity of 60 tons. Nine 5-ton locomotive steam cranes have been recently acquired, and the facilities for the discharge of grain cargoes improved. At Trafford Park important developments are in progress. The Manchester Corporation is building a large electric power station on land belonging to the company. Among the new undertakings is a glass company, which is now erecting works designed for a capacity of 42,000,000 bottles a year. A very popular visit was that paid to the train control office of the Lancashire and Yorkshire Railway, where the modern system of centralised traffic control was explained and illustrated. The party which inspected the car works of the Manchester Corporation Tramways also found much to interest them. The Hyde Road establishment is equipped with all the necessary plant and machinery for new car building as well as repair and maintenance work. The sawmills, smithy, car body shop, machine shop, electrical shop, and paint shop were open to inspection. Running repairs are executed both day and night at all the depots, and special attention is paid to permanent way work. The processes employed include electric, oxy-acetylene and thermit welding, and rail hardening by the Sandberg "in situ" process

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World's Power Resources.

By W. Forster Brown.

It may be of interest to note the relative rate of output to gross estimated reserves in the three countries producing the largest annual output of coal during 1913. It must, however, be remembered that a large deduction, probably at least one-third, must be made from the estimated gross resources to arrive at the quantity of probable workable coal:

	Reserves. Million Tons.	Output (1913) Tons.	Output (1919) Tons.
United States ...	3,838,657	508,893,052	485,949,107
United Kingdom..	189,533	287,430,473	229,779,517
Germany	423,356	274,264,420	199,159,934

If the question of reserves of coal in relation to the existing production was the only problem facing this country to-day in connection with its coal supply, we should not require to exercise our minds very acutely. A consideration, however, as to how much of these potential reserves we shall be able to produce at such an economical cost as will enable our many other industries to live in competition with those of other countries brings us face to face with a more pressing problem, and one which the country will look to its mining engineers, colliery managers, and others engaged in the industry, to solve.

In comparing the year 1891—a year of high prices in the coal trade—with the present time, I should not, perhaps, be far wrong in saying that the cost of production in this coalfield has risen by over 300 per cent. Indications are that the cost of production in the United Kingdom has and is rising at a more rapid rate than in many other countries. To the extent that this is so, and may continue to be so, must our industries be handicapped in the future in competitive markets. Certain it is that the high prices which have to be paid for uncontrolled coal is stimulating the production of other classes of fuel, and is directing attention to other means of producing power. The most important of these at the moment may be taken to be the use of oil in one form or another, and it may be of interest to glance at the figures relative to the production of petroleum in the world.

It is not possible to say to what extent the oil reserves of the world will be able to respond to the very rapidly increasing demand, but in view of the wide distribution of the resources already known, and the fact that many countries have as yet been but scantily explored, it appears undoubted that a considerably larger output than that at present produced will be found possible. As an indication of the increasing use of oil fuel for navigation purposes, the appended figures taken from Lloyd's Register of Shipping

Report, 1919-1920, are of interest. The total number of vessels classed in Lloyd's Register, at June 30, 1920, was 9,587, with a total tonnage of more than 25 millions gross. Of the world's tonnage of vessels of 100 tons and upwards on Lloyd's Register an approximate division as to the final motive power is made as follows:—

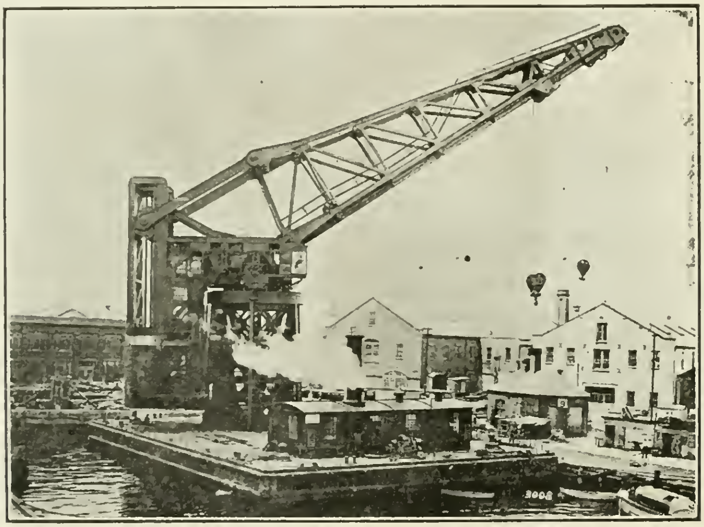
For the Year ended June, 1919:—Using coal as fuel, 82 per cent.; fitted to use oil as fuel for boilers, 16.3 per cent.; using oil in internal-combustion engines, 1.5 per cent.; using sail power only, 6 per cent.

For the Year ended June, 1920:—Using coal as fuel, 76 per cent.; fitted to use oil as fuel for boilers, 16.3 per cent.; using oil in internal-combustion engines, 1.7 per cent.; sail power only, 6 per cent.

It will be seen that during the period of one year oil has gained at the expense of coal 6 per cent. of the tonnage available.

Other methods of supplies of power independently of coal are also receiving increased attention. Perhaps the most important to which reference may be made is the possible utilisation of water power resources available in our country and in countries some of which are at present partially utilising British coal. It is estimated that the water-power resources of the United Kingdom are sufficient, excluding tidal energy, to develop continuously over 1,000,000 i.h.p. per annum. Taking France, Italy, Iceland, Norway and Sweden, it seems probable that the water-power resources in these countries are capable of developing not less than 24,000,000 h.p. This estimate does not include power which might be produced from the energy of the tides.

We may expect that so long as the cost of producing coal remains as it is at present, or rises, it will tend to lose ground as a direct power producer. The extent to which this will take place will be dependent upon several factors, amongst which may be cited the capability of the power production to meet the demand for them, and the financial aspect in connection with finding the large sums necessary for the development of some of these other power resources. The fact, however, that these other methods of obtaining power should be now receiving serious attention, coupled with the increasing consumption of oil as a power producer, are but indications that the present level of cost of production of coal in this country, and the price that other countries dependent upon imported coal have to pay, is closely approaching a limit which threatens industrial activity. The present high level of cost of coal production in the United Kingdom has been brought about by causes outside the control of the engineer, e.g., the high rate of wages now paid, coupled with the high cost of materials. Had it not been for the many improvements which have been carried out by those engaged in the coal industry in the past, the present cost would undoubtedly be higher than it is.



One of the Largest Pontoon Cranes Ever Built.

One of the two huge floating cranes recently constructed for the United States Navy. The cranes are designed to lift 150 tons, at a radius of 105 feet, with a vertical range from 25 feet below to 95 feet above the level of the water.

Cooling of Large Electrical Machines.

Electrical machines of high specific power, such as turbo-alternators, have hitherto been generally cooled by simple air circulation, the air being taken and given out in the engine-room or its vicinity.

This system has several disadvantages, the chief of which are the difficulty in eliminating dust, and the risk of spreading fire present when large volumes of oxygen are being driven through the machine windings. It is, moreover, now becoming recognised as inadequate with the growth in the size of generating units, and several other systems have been recently proposed, such as the addition of surface or water-jet cooling radiators for the circulating air (*General Electrical Review*, Feb., 1920), and direct water cooling by water led through pipes and cavities in the machine frame. These proposals are criticised by the present author—the first as exceedingly cumbrous and as not removing the risk of fire, while adding (in its alternative form) the risk of humidity, the second as still necessitating air for the cooling of the rotor and the bulk of the stator.

The author, in collaboration with M. Corblin, has been working for a long time past on a new system which he has just patented, in which the cooling is effected by a suitable volatile liquid, led to the parts to be cooled, where it is vaporised, then condensed and used again. This process permits, at least theoretically, the collection of the heat produced in an electrical machine, part in the form of motive power and part in the form of useful heat. Amongst the liquids suggested and discussed are carbonic anhydride, sulphuric anhydride, and methyl chloride. The liquid would arrive directly in the ventilation ducts and on the stator winding. It would be projected into the rotor or introduced through the shaft and distributed centrifugally.

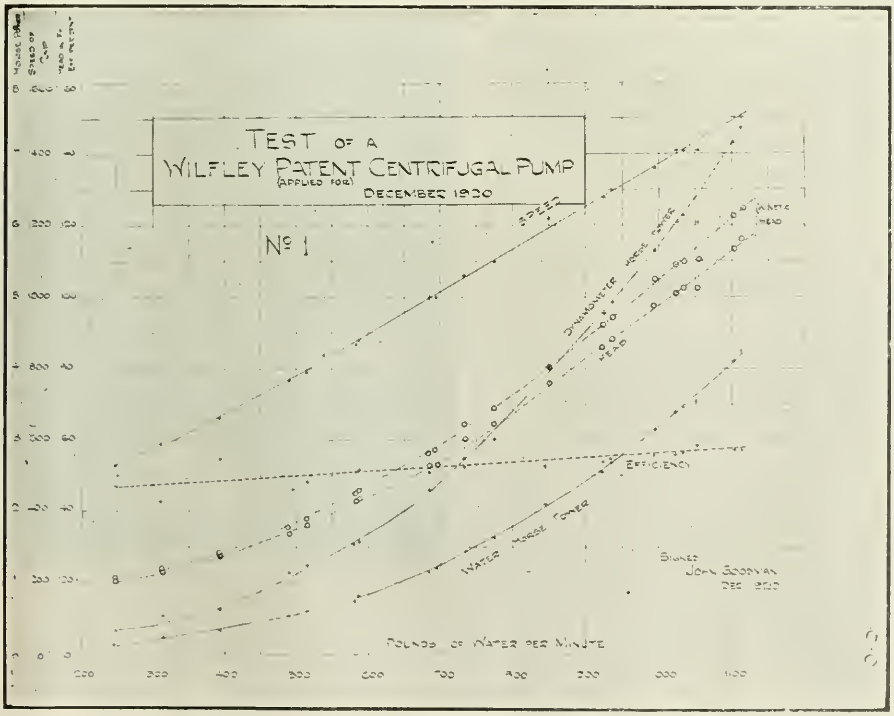
Heat is the limiting factor in the output of such machines as alternators. This system is claimed to permit a considerable increase of kva. output per unit of weight, at a small cost which will be much more than recompensed by that increase of output, and by the longer life of the machine. (P. Bunet, *Revue Générale de l'Electricité.*)

The New Wilfley Centrifugal Pump.

With reference to the article on the new Wilfley Centrifugal Pump, which appeared in the engineering section of our last issue, we have received from Messrs. A. & S. Ash Bros., Engineers and Merchants, of Cullinan Buildings, who represent the Wilfley people locally, the following:—" Our principals, the Wilfley Company, of Salisbury House, London Wall, claim their pump has a higher efficiency than any other of this class, and furthermore, will be able to maintain this efficiency, by reason of its special construction. As you are aware, efficiency is one of the great weaknesses of centrifugal pumps; however carefully manufactured, after they have been in operation for a certain length of time, efficiency is lost by reason of the impellor running in metal to metal contact. We have not yet received details for the larger sizes, and obviously for special pumping jobs particular designs will have to be prepared, but the minor ranges, say from 2 in. to 6 in., we are in a position to supply with little delay. We hope that you will find this information sufficiently interesting to publish as a continuation of your article on the subject on page 737 of last week's issue, and for this purpose particularly commend the Curves."

BRITISH MANNESMAN TUBE CO., LTD.

Further details are now available regarding the proposed fusion with Baldwins, Ltd. By the agreement arrived at by the boards of the two companies, Baldwins, Ltd., offer to purchase ordinary shares in the British Mannesmann Co. at the rate of 20 Baldwins' ordinary £1 shares and eleven 5 per cent. " B " preference £1 shares in exchange for 40 British Mannesmann ordinary shares. The basis of the exchange is deemed fair, and the agreement is conditional on holders of 76 per cent. of the British Mannesman shares accepting the offer. Financial circles generally appear of opinion that the offer is an advantageous one and should be accepted.



The South African Currency Problem.

AN ILLUMINATING DOCUMENT—THE RESTORATION OF GOLD CURRENCY—A TRIBUTE TO MR. SAMUEL EVANS—PROFESSOR CANNAN ON AN "INEXPERT COMMITTEE" AND "A VERY ABLE WITNESS."

By Professor Edwin Cannan.

We are indebted to Mr. Samuel Evans, that sturdy disciple of the sound money school, for a copy of the accompanying valuable paper by Professor Edwin Cannan, Professor of Economics in the London University, on the South African Currency Problem. Prof. Cannan's illuminating treatise appeared in the "Economic Magazine," and it has been condensed, but the abstract is too lengthy to be published in one issue of the "Mining Journal," and we are accordingly reproducing it in two instalments. We give hereunder the first portion of the article, in which Prof. Cannan deals with this complex and controversial subject up to the time of the sitting of the "Inexpert Committee" of the South African Government, the members of which, he declares, seem to have been "clay in the hands of Mr. (now Sir) Henry Strakcsch."

If we had been asked in 1913 "What are the chances of South Africa deserting the gold standard in case of a European War?" we should probably have unhesitatingly rejected the idea as beyond the bounds of possibility, and, if we knew a little history, we should have backed our opinion by quoting the classic case of California, the gold-producing State of the American Union, holding firm to gold during the American Civil War. But now, at the end of September, 1920, the South African pound sterling is not only depreciated far below the value of the 113 grains of fine gold required to make a sovereign (or its equivalent, $4.87 in Canadian or American gold coin), but well below the 91 grains which will buy 4.87 Canadian paper dollars, and even a little below the 82 grains which will buy an English, Australian, or New Zealand paper pound. To any Rip van Winkle who went to sleep in 1913 and awoke in 1920 this would be an astonishing phenomenon. The great gold producing Dominion with a paper standard more below its par with gold than any other in the British Empire!

Some Pertinent Questions.

If our Winkle's awakening took place in South Africa and he inquired of the most intelligent and well-informed persons he would be likely to meet there why these things were so, he would probably be told that the cause was a scarcity of gold in South Africa due to its illicit exportation. "Illicit exportation!" we can imagine him exclaiming, "do you mean to say that you have prohibited the export of gold and yet have not enough? Why, when I went to sleep you were exporting over 30 millions a year, and yet you had plenty—more than enough, in fact, as the value of gold in other commodities was falling. What has happened? Have the mines given out?" "Oh dear no!" the answer would be; "of course, the gold output goes on being exported quite openly and lawfully. That is only a 'commercial product,' just the same as wool. The exportation which has troubled us and which we have tried to prevent, is the exportation of gold coin, and when we said 'gold' just now we meant that, as you would have known if you had not been asleep all this time." Winkle, unsatisfied, might go on to inquire why it should be legitimate and healthy to export 440 oz. of uncoined gold and ruinous smuggling to export exactly the same weight of fine gold in the form of 1869 sovereigns, but this question it is not likely that he would get any intelligible answer.

An Historical Explanation.

The explanation of the whole puzzle, like most explanations of economic facts, must be historical. During the War it was supposed to be a military measure of the first importance to "prevent gold from getting into the hands of the enemy," and it was believed that one good measure towards this end was for each country, including in that term detached parts of the British Empire, to prohibit all unlicensed carrying out of gold, not only to the enemy, but to any part of the world. The War seems also to have somehow revived, not only among belligerents but even among neutrals, the mediaeval fear of losing the currency. Consequently prohibitions of the exportation of any kind of gold, and also of the melting down of gold coin for any purposes whatever, became almost universal. A century ago such legislation was everywhere ineffective and consequently gets little more than passing notice in the controversies of that time. But in the modern world, in islands such as the United Kingdom, Australia, and New Zealand, conditions are different and infractions of the law can be kept within such small limits as to become practically unimportant. This makes it possible in such countries to issue enough paper money to bring the value of the unit of account below its par with gold without taking away its redeemability in (or, as is usually said, its convertibility into) gold coin. As someone said in one of the old bullion debates, gold imprisoned in the coin is degraded to the level of the paper. We do not run to the Bank of England and demand sovereigns in exchange for our Bradburies, because we know that, as law-abiding people, we cannot use sovereigns otherwise than as currency, and that as currency

Sir Henry Strakosch.

they are worth no more than Bradburies, though as free gold they would be worth 39 per cent. more. When a paper currency is convertible into free gold, it cannot go below its par with gold, because its convertibility limits the quantity of it which can be put into and kept in circulation: when it is convertible only into a coin which cannot be used otherwise than as currency, it can be issued just as freely as if it were wholly irredeemable, and with the same effect on the general purchasing power of the unit of account. Hence the fall below par of the British and Australasian pounds.

When War Broke Out.

On the outbreak of the War the British Government induced the mine-owners to agree to hand over the whole output of the mines to it, so that the Union of South Africa had no need to concern itself with the export of uncoined gold; but it very naturally fell in with the prevailing fashion of prohibiting the export of coin. It further proceeded to make it easier for the banks to enlarge the paper currency by allowing them to issue £1 and 10s. notes, the old limit having been £5. If the exportation of coin could have been stopped as effectively as it was in the United Kingdom and Australasia, the South African banks would then have been in as proud a position as the Bank of England under the restriction of 1797-1821, and nothing except their fear of the eventual removal of the embargo on export would have stood in the way of South African pounds falling to the value of Polish marks or Russian roubles. It is true that, unlike the Bank of England notes of 1797-1821, their notes were still convertible into coin, but that convertibility would have been a hollow mockery like the present convertibility of the Bradbury. But South Africa's intercourse with the rest of the world is not so easy for a Government to control as that of the United Kingdom and Australasia, partly because the Union is not an island, and partly because two sections of the population—natives and Indians—do not belong to the governing democracy and also have connections with the outside. Consequently extensive smuggling out of gold coin was possible, and was sure to take place if made profitable.

Prevention of Depreciation.

This prevented the depreciation of the unit of account, the South African pound sterling, having quite the easy course which it had in the United Kingdom, Australia, and New Zealand. When the South African banks had issued so much paper that the South African pound became worth appreciably less than 113 grains of fine gold, they were asked to fulfil someof their promises to pay pounds by handing over sovereigns, and the sovereigns thus obtained were smuggled abroad and sold for more than the foreign currency equivalent of a South African pound. In order to meet this demand for sovereigns the banks were obliged to buy raw gold in London "at a premium," i.e., paying more than a South African pound for each 113 grains, and getting it coined in the usual way at the London Mint. In other words, the penalty which they had to pay for issuing too much paper was that they had to buy a certain number of sovereigns at perhaps 26s. or 28s. and pay them out at 20s. If the "leakage" of gold coin, as they appropriately called it had gone on groiwng, it wolud have amounted to the same thing as a removal of the embargo on export, and have forced the banks to reduce their paper till one pound was again worth as much as 113 grains in gold. During the spring of 1920 this influence was sufficiently strong to cause an appreciable rise in the gold value of the South African pound and to make it break away from the United Kingdom pound, which it had up to that time closely followed.

It became clear that mere prohibition of the export of gold coin was not a sufficient protection for an over-issue of paper. If South Africa was determined to have a paper currency depreciated against gold, the obligation to redeem the paper in gold coin must be removed. Otherwise it would be better to recognise the situation formally by removing the ineffective embargo, which was only giving illicit profits to law breakers.

The long-run interest of the gold-mine owners and workers, properly understood, was entirely in favour of the earliest possible removal of the embargo and return to the gold standard. The gold mines, in South Africa, as everywhere else in the world, are suffering from the diminution in the purchasing power of their product caused by the disuse of gold in circulation and reserves by the principal countries of Europe. The direct importance of South Africa as an absorber of gold for currency purposes is no doubt almost negligible, but as the chief gold producer of the world her example carries great weight. If South Africa, producing every year perhaps five times as much gold as she required for her whole stock of gold currency before the War, cannot afford to have a gold currency, who can? It is not well for the village bootmaker to declare boots expensive and unhealthy and to parade himself and his family barefoot. To the leather merchant there is nothing like leather, and to the Transvaal there should be nothing like gold. Had the Union of South Africa never gone off the gold standard the mine-owners might have been trusted to favour its continued maintenance.

But the standard having been abandoned, and the unit of account having been depreciated against gold, when the process was obscured, so to speak, by the smoke and dust of war, the mine-owners found that on the one hand the costs which they had to meet in South African currency had risen, owing to the increase of money-wages and prices caused by the additional paper, and most of them seem to have believed that, though a return to the gold standard would cause some diminution in the monetary amount of these costs, the diminution would not be equal to the loss which they would suffer by having to give more of their raw gold for a given amount of South African money. With the South African pound worth 82 grains, 82 grains plus cost of marketing will pay the workman in South Africa £1; the mine-owner asks himself in some complicated form: "If the pound rises to 113 grains, shall I be able to persuade that man to take 82/113 of £1, which is 14s. 6d.?" No doubt there would be a loss under this head, which, though only temporary, as all prices adjust themselves in the long run, would never be directly recovered; but this special and limited loss ought to be faced in view of the general advantage to the gold industry of the restoration of the use of gold currency. The mine-owners, however, with the important exception of Mr. Samuel Evans, have not risen to this height, and are consequently for the most part but lukewarm supporters of a return to the gold standard.

At the end of March, 1920, the House of Assembly appointed a Committee "to inquire and report upon (a) the effect of the embargo on the export of specie upon the cost of living; (b) the desirability and practicability or otherwise, with a view to improving the economic conditions of the Union, of removing the embargo and of modifying the statutory provisions at present in force in regard to currency and banking.

"Clay in the Hands of Strakosch."

Houses of Parliament in the British Dominions, and in the mother-country also, would do well to recognise the fact that they do not contain experts on every subject, and are consequently incapable of appointing committees suitable for every kind of inquiry by selecting members entirely from their own body. It is no use to say that they will call, and be guided by, the evidence of expert witnesses. The expert witness who offers himself is by no means always the best who can be obtained. The wholly inexpert committee does not know whom to call, and when it has before it the right or wrong expert, it does not know the right questions to ask him. The South African Committee of members of the House of Assembly, set up to consider currency and banking, consisted chiefly of men eminent in their particular line of life and possessing very considerable ability, but it does not seem to have included anyone who had any training in the theory of the subject. It would probably have been much more effective if it had included in its number either or both of the two Professors of Economics (Dr. Lehfeldt, of Johannesburg, and Mr. Leslie, of Capetown) whom it called as witnesses. Whether they were right or wrong in their recommendations, professional training and the practice of teaching would have enabled them to put more searching questions than the inexpert Committee was able to ask.

As it was, the Committee seems to have been clay in the hands of Mr Henry Strakosch, a very able witness, usually resident in London, now managing director of one of the large gold-mine combinations, who had formerly passed through excellent practical experience of foreign exchanges in Europe and more recently had been concerned in the marketing of the gold product of South Africa in the world at large. He had written a pamphlet on what ought to be done in South Africa. The Committee began by considering this and his evidence upon it occupies the first 162 of the 574 pages of evidence, although for 125 pages the questions are omitted, in order presumably to shorten the minutes.

(To be Continued.)

Elandslaagte Collieries.

A LONG-ESTABLISHED NATAL COMPANY'S REPORT FOR THE YEAR—DECLARATION OF A 6¼ PER CENT. DIVIDEND—SATISFACTORY BORINGS ON HOUTKOP AND PLATBERG.

The directors of this old-established Natal Colliery, in their annual report to be presented to shareholders at the twentieth annual general meeting to be held in the Company's Offices, Natal Bank Chambers, Durban, on the 17th day of March, 1921, state: The business of the company was carried on successfully during the past year, notwithstanding many difficulties which arose principally from shortage of labour and insufficient supply of railway trucks. The high prices of mining stores and material and increases in the cost of labour have had the inevitable effect of diminishing the profits. The statement of the income and expenditure and the balance sheet of the company show that the net profits for 1920 were £14,459 10s. 3d., against £12,062 0s. 1d. in 1919. The total output for 1920 was 55,910 tons against 56,868 tons in 1919. The general and other expenses of the company for 1920 amounted to £2,495 4s. 11d. against £2,815 4s. 1d. for 1919. The sum available for depreciation and a dividend is £14,966 4s. 3d. This amount has been allocated as follows: Depreciation—Cost of boring on Elands Laagte and Platberg in 1920, written off, £1,363 5s. 5d.; capital redemption reserve, £1,398; 6¼ per cent. dividend, £10,312 10s.; carried forward, £1,892 8s. 10d. The manager's report on the borings on Elands Laagte and Platberg shows very satisfactory results. The analyses of the coal from the bores show it to be of a very excellent quality. The inclined shaft and a new rope haulage system have been completed during 1920, and the best economical results are expected therefrom.

The Manager (W. F. Betty) states in his report: During the year five boreholes were put down on "Houtkop"—this being a portion of the farm Elands Laagte—and a considerable area of good coal was proved at a depth of 300 feet to the top seam. The average thickness of the top seam was 4s. feet 9 inches, which includes a shale band of an average thickness of 7 inches, giving 4 feet 2 inches of clean coal. The bottom seam was found to be about 18 feet below the top seam, with an average thickness of 2 feet 8 inches clean coal, and from analyses and appearance is of superior quality to the top seam. One borehole was put down on the farm "Platberg," striking the top seam at a depth of 252 feet, the thickness of seam being 4 feet 11 inches, with a 9 inch shale and sandstone band, giving 4 feet 2 inches clean coal. An endless rope haulage system was installed during the year, and we are now drawing all coal up the incline shaft and along the surface to the screening plant, and this is working satisfactorily. Plant, machinery, buildings, etc., have been well maintained throughout the year. During the first part of the year we had sufficient labour for our requirements, but during the latter part had great difficulty in securing any. At present labour is offering more freely.

RAND WATER BOARD
(6 Per Cent.) STOCK, 1950.

(Issued by the Rand Water Board under powers conferred by Act No. 18 of 1914 (South Africa), and subject to the provisions of the Board's Statutes.)

PRINCIPAL repayable **at par** on the 30th June, 1950.

ISSUE PRICE—£97 10s. 0d. per **£100** Stock.

INTEREST at **6** per cent. per annum, payable half-yearly, on the 1st January and the 1st July in each year.

(*The yield from the Stock on the above terms is equal to* £6 3s. 8d. *per cent. per annum, allowing for redemption at par in* 1950).

The Rand Water Board gives notice that it is prepared to receive applications for the above-mentioned Stock, free of exchange, at all the South African Branches of—

The National Bank of South Africa, Ltd., and The Standard Bank of South Africa, Ltd.

Prospectus and Form of Application

and any further information which may be required regarding this issue of Stock can be obtained from the Secretary, Rand Water Board, P.O. Box 1703, Johannesburg, or at any Branch of the above-mentioned Banks.

NEW KLEINFONTEIN COMPANY, LTD.
(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the TWENTY-FIFTH ORDINARY GENERAL MEETING OF SHAREHOLDERS in the above-named Company will be held in the Board Room, Fourth Floor, National Bank Buildings, Simmonds Street, Johannesburg, on FRIDAY, the 27th day of MAY, 1921, at 11 a.m.

BUSINESS.

1. To receive and consider the Statements of Account and the Reports of the Directors and the Auditors for the year ended 31st December, 1920.
2. To elect two Directors in the place of Sir Abe Bailey, Bart., and Mr. H. O'K. Webber, who retire in terms of the Company's Articles of Association but who are eligible and offer themselves for re-election.
3. To appoint Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors, Messrs F. W. Diamond & English and C. L. Andersson & Co.
4. To transact all such other business as may, under the Articles of Association, be transacted at an Ordinary General Meeting.

The Transfer Register of the Company will be closed from the 26th day of May, 1921, to the 4th day of June, 1921, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting must produce their Share Warrants at the places and within the times mentioned below:—

(a) At the Head Office of the Company, National Bank Buildings, Simmonds Street, Johannesburg, at least twenty-four hours before the time fixed for the Meeting;
(b) At the Offices of the Company in London, 208-224, Salisbury House, Finsbury Circus, London, E.C., at least thirty days before the date fixed for the holding of the Meeting;
(c) At the Offices of the Paris Agents of the Company, 'Credit Mobilier Francais," 30-32, Rue Taithout, Paris, at least thirty-five days before the date fixed for the holding of the Meeting.

By Order of the Board,
H. CAMERON,
Secretary.

Head Office,
National Bank Buildings,
Simmonds Street, Johannesburg,
1st March, 1921.

The Premier Diamond Company's Year.

SATISFACTORY RESULTS BUT BAD OUTLOOK FOR THE COMING YEAR.—THE GENERAL MANAGER'S REPORT.

The annual meeting of the Premier Diamond Company was held a week ago and hereunder we give an abstract of the speech of the Chairman, Sir Thos. Cullinan, and also of the General Manager's Report. The Chairman stated that the year's work resulted in a balance of a million and a third for division between Government and shareholders. The Premier Company has had a successful year, but the outlook for the current 12 months is not good, retrenchment has had to be carried out and only one shift is to be worked at the mine until there is an improvement in the gem market.

An interesting table which accompanies this report shows that up to the end of October last the Premier Company had washed 93½ million loads of ground for a recovery of 21,686,461 carats worth £23,158,072.

In moving the adoption of the report and accounts at the annual general meeting of the Premier (Transvaal) Diamond Mining Company, Ltd., held in the Board Room, Cullinan Building, Johannesburg, Sir T. M. Cullinan, D.S.O., stated that after providing for all expenditure, including the depreciation on investments and exchange on remittances, these two items amounting to £66,758, a balance remained of £1,332,333 for division between the Government and the shareholders. Of this the Treasury received £799,400 as against £726,568 last year, the shareholders' portion being £532,933. Last year the balance carried to the shareholders' appropriation account was £484,392

Exchange on remittances, the speaker continued, amounted to £42,487, and was due to heavy adverse exchange rates that prevailed during the greater portion of the financial year in obtaining money from London. With the more favourable rates now ruling it was hoped this item would disappear from the next accounts. The amount, £24,270, for depreciation on investments was also greater than last year's figure of £3,453. All investments were written down to market price at the time of the closing of the books. The company's financial position was sound, for in addition to the cash balance of £40,964 carried forward to next year they had a 40 per cent. interest in the trading and emergency funds of £500,000, as well as a 40 per cent. share of expenditure upon equipment and stores, amounting to £1,940,637.

Demand for Diamonds Falls.

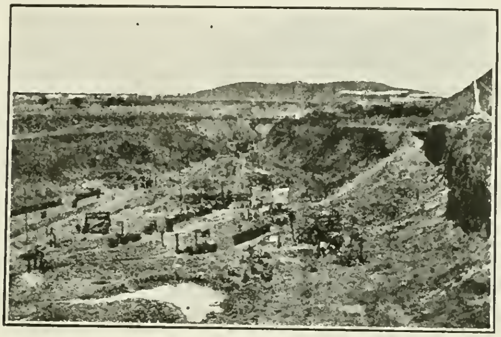
Proceeding, the speaker said that while the results before shareholders were highly satisfactory, unfortunately the prospects for the current year were by no means good, owing to the falling off in the demand for diamonds. They were aware from the published statements of the chairmen of the De Beers, New Jagersfontein and other diamond mining companies that the demand for diamonds had diminished, and all reported a considerable falling off in sales.

A Lean Year.

So it was with the Premier Company, and if the diminished demand continued shareholders could not look forward to the same satisfactory results as were before them. Their accounts were made up to October 31. The effect of the dull diamond market was, therefore, not appreciably reflected in the year's operations. No improvement in the diamond market had taken place since the close of the financial year, and up to date everything pointed to the present financial year being a very lean one in profits. They had in the past similar set-backs in the diamond trade, yet the diamond market had always proved to possess wonderful recuperating powers.

In keeping with the policy of restriction of output the directors decided, as from November 1 last, to work only two shifts instead of three, as formerly, and that reduction in operations had continued up to the present. It had been found necessary, as from March 1, still further to restrict operations at the mine, and only one shift would be worked. The cost per load, under the restricted scale, would be higher, but the actual cash outlay would be a great deal lower.

The working costs during the year under consideration were just over 3d. per load higher than in the previous year, due mostly to the increased wages paid to both the European and native employes. The yield remains much about the same, being only fractionally lower than the previous year, namely, .176 as against .180. However, in spite of an increased cost per load and a slightly lower yield, the year's results had been a record, still further proving that the real test is the value realised per load. The report and accounts were adopted. The retiring directors, Messrs. R. R. Hollins, S. B. Joel and J. Gunson Lawn, were re-elected, and the auditors reappointed.



THE WORLD'S LARGEST DIAMOND MINE: THE PREMIER.

Mr. McHardy's Review.

The General Manager, in his report for the financial year ending 31st October, 1920, remarks, inter alia:—

The total number of loads of sixteen cubic feet hauled from the mine was 4,726,754, accounted for as follows:—

Blue ground from 360 ft. level—washed	3,384,384
Blue ground from 410 ft. level—washed	1,276,114
	4,660,498
Stone and reef (discarded)	66,256
Total	4,726,754

The total production of diamonds was	820,564 carats.
Average yield per load	.176 carat.
Average cost per load mined and washed	2s. 8.920d.*
Average cost per carat	15s. 6.975d.*
Average cost per load on total loads hauled...	2s. 8.459d.*

* Calculated on mine expenditure only, viz., £639,270 4s. 3d.

The foregoing summary of operations discloses an increase of 131,237 in the number of loads crushed and washed, while the output of diamonds is 5,987 carats in excess of the production for the previous year Mining has been carried on, generally, above the ninth, or 410 ft level, over the whole pipe area, and, though the operations have been hampered at times through the shortage of native labour, the results obtained fulfil the requirements of your Board.

Yield.

The yield which showed a diminishing tendency during the first half of the year, has since improved, and, while the average for the whole financial period is slightly below that recorded for the preceding year, the grade for the six months ended 31st October, 1920, is higher, averaging .182 carat per load washed.

Working Costs.

Compared with the previous year, there is an increase of 3.018d per load mined and washed in the working costs. This is accounted for by the 20 per cent. increase in wages granted to the European employees, which became effective as from the 1st February last, higher wages paid to natives and the continued advance in the prices of all mining stores. The inclusion in the working costs of items of expenditure having no direct bearing upon current operations, such as the reconstruction of the No. 4 washing gear, the erection of stock proof fences on the boundaries of the company's farms to prevent the spread of East Coast Fever, road construction and the maintenance of buildings, amounting in all to £46,826, has added to the cost of production to the extent of, nearly, 2½d. per load washed.

Hauling and Washing Plants.

The main hauling plant has worked remarkably smoothly during the year, and the same may be said of the subsidiary mechanical haulages in use throughout the mine and works. In addition to the usual running repairs which have been effected from time to time, a considerable portion of the heavy timber framework supporting the crushers has been renewed, and the No. 3 washing plant, which has handled all the ground treated during the past year, is in good working order. The circular plunger boxes, which formed the chief feature of the alterations contemplated in connection with the No. 4 gear, have now been installed throughout the entire plant and this, in conjunction with the other improvements made, will add considerably to its efficiency when this supplementary washing machine is again required. Wherever possible, steel girders have been substituted for the timber framing originally erected, especially where the latter had shown signs of decay due to the plant being closed down so long. The replacement of the gyratory crushers, elevators, etc., has not yet been completed owing to the non-arrival of the spare parts from oversea.

Development.

At the close of the financial year there were still 27,000,000 loads of blue ground remaining above the 410 ft. level. The development of the 460 ft. level in the south end of the mine was completed at the 31st October last, and the total quantity of ground available above this level represents 41,000,000 loads. An incline tunnel 11 ft. x 7 ft. and 150 feet long has been driven through the bar of floating reef, parallel to its longest axis, to provide a haulage way between the 410 ft. level on the north side of the mine, and the main onsetting station. Besides facilitating future development work, this tunnel will obviate the necessity, which has hitherto arisen, for maintaining a comparatively large bench of diamond bearing ground, on each level, to support the auxiliary mechanical haulage operating in the northern section of the workings. Nothing in the nature of an extensive fall of reef has occurred from the walls of the mine, neither is any trouble anticipated from that source. It may be mentioned, also, that at the present lowest working level there is no indication of a contraction of the pipe area. The average depth of the mine is 288 feet, an increase of 13 feet for the year.

Floating Reef.

Owing to the scarcity of native labour and the present high cost of explosives and other mining commodities, no work has been done, during the past year, towards the removal of the bar of floating reef, and the quantity of waste rock shown as having been mined and discarded, amounting to 66,256 loads, has been taken from the working faces in the ordinary course of mining. It is proposed, in future, for reasons of economy, to discontinue the practice of excavating an open cutting through the rock, at every level, to connect the workings on the east and west sides of the bar of floating reef and to provide communication between these sections by means of a tunnel of sufficient dimensions to enable a mechanical haulage to be operated therein The adoption of this course is less likely to effect the stability of the reef, and, having regard to the present restricted scale of operations, its removal can be conveniently deferred until more favourable conditions obtain without interfering with the open east system of mining for some considerable time to come.

Water Supply.

Although practically no rain fell between March and October, the storage reservoir at the Wilge River Pumping Station has been overflowing during the greater part of the year. The total inflow to the reservoir was 3,990,000,000 gallons and the quantity of water pumped to the mine represents 180,000,000 gallons. The pumping plant has been maintained in an efficient state of repair and continues to work satisfactorily. The rainfall was 25.53 inches compared with 24.67 inches for the previous year.

Native Labour.

With a view to augmenting the supply of native labour, which has shown a gradual falling off, particularly from the Transvaal areas, recruiting agencies were opened in several of the labour districts of the Cape Province, in March last, but the results, so far, have been disappointing and the complement of labour available, throughout the year, has not always been sufficient for requirements. Apart from other adverse factors, the expenditure incidental to the establishment of the above-mentioned agencies has added appreciably to the cost of recruiting and the total charges in this connection are, consequently, some £2,200 higher than those for the previous year. The number of natives admitted to the compound was 7,928, of which 2,110, or 26.61 per cent., presented themselves voluntarily, the balance having been forwarded by the company's agents. Recruiting expenses amounted to £11,423 16s. 11d., equal to 28s. 9.82d. per head. The daily average number of natives employed was 4,794. Wages amounted to £229,381 10s. 5d., equivalent to 3s. 3.178d. per native per day, including piecework and overtime, natives, as usual, providing their own food. The health of the native employees continues to be satisfactory. The deaths from disease numbered 32, of which 14 were due to Tuberculosis, the total death rate being equivalent to 6.68 per 1,000 per annum. The system evolved to ensure the thorough inoculation of all natives with Sir Spencer Lister's pneumococcal vaccine has not been relaxed, and, it is gratifying to record that, during the year under review, only three cases of pneumonia occurred, the death rate from this disease being equal to .42 per 1,000 per annum.

White Labour.

The daily average number of white men employed, including 62 apprentices, was 619, and wages under this heading amounted to £225,772 6s. 2d., an increase of £46,937 0s. 1d., compared with the previous year.

Capital Expenditure.

No capital expenditure has been incurred during the past financial year.

CERTIFICATED COLLIERY MANAGER.

Appointment wanted as manager or mine captain on colliery by fully qualified man with over 16 years' mining experience, including fiery mines.

Reply to " COAL,"
C/o Office of this Journal.

The Week in the Sharemarket.

FURTHER LIQUIDATION—QUOTATIONS DEPRESSED.

The local sharemarket has been very dull during the past week. There has, in fact, been little disposition to deal, but a general condition of stagnancy has occasionally been punctuated by periods of further liquidation.

The February returns of the gold mines, on account of strikes and the short running time, coupled with a lower selling price for gold throughout the month, are unsatisfactory, and diamond and base metal shares are very weak on account of extreme depression in the diamond and metal markets.

Advices to hand from London by the mail point to the fact that London considered "Kaffirs" attractive at the prices ruling three weeks ago. The "Financial Times," for instance, remarks:—"About a dozen Kaffirs were marked this morning ex their dividends for the second half of 1920, but owing to the slackness of business only one or two of them managed to recover any noticeable proportion of the amounts deducted from prices. Nevertheless, the attractive yields offering tempted a little investment demand for the best shares from people who professed themselves quite willing to see the strike through. They argued that they might easily lose the opportunity afforded by present prices should the strike suddenly come to an end, particularly if the negotiations between the Union Custodian of Enemy Property and our Public Trustee also come to an early favourable conclusion. On the basis of the aggregate dividends for last year, the four leading Kaffirs marked ex div. this morning give the following yields at to-night's prices: Crowns, over 19 per cent.; City Deeps, 16 per cent.; New Modders, 15¾ per cent.; and Modder B's, 15 per cent. The Modder and Modder B, as high-grade mines, did not owe such a large proportion of their last year's profits to the gold premium as did the two others."

	Fri., Feb. 25th.	Sat., Feb. 26th.	Mon., Feb. 28th.	Tues., Mar. 1st.	Wed., Mar. 2nd.	Thurs., Mar. 3rd.
Anglo-Amer. Corp.	21 3	21 3*	21 6	21 0	19 9	18 9
Apex Mines ..	6 9*	7 3†	6 9*	7 0†	7 0†	7 3†
Bantjes Consolidated	3 9	3 9*	3 9*	4 1*	4 1½	4 1*
Brakpan Mines ..	—	—	—	—	—	50 0*
Brick & Potteries ..	4 6*	4 6*	4 6*	4 6*	—	—
Bushveld Tins ..	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Cassel Coals ..	37 6†	35 0†	—	35 0†	—	—
Cinderella Cons. ..	—	—	—	2 6†	—	—
City & Suburbans	6 6*	6 3*	6 6*	7 0†	6 0*	—
City Deeps ..	40 0*	40 0*	—	39 0*	—	39 0*
Clydesdale Colls. ..	—	25 0*	25 0*	25 0*	—	28 6†
Cons. Diamonds ..	14 6	14 0*	—	12 6*	12 0*	12 6*
Cons. Investments	—	—	23 6*	23 0*	26 0†	—
Cons. Langlaagtes	13 6†	—	—	12 9	12 0*	13 0†
Cons. Main Reef ..	10 9*	10 10*	10 9*	—	10 6	—
Cons. Mines Select.	—	17 6†	—	—	—	17 0†
Coronation Colls. ..	50 0†	50 0*	—	—	—	—
Coronation Frhlds..	1 1	1 1*	1 1*	1 1*	1 1*	1 1
Coronation Synd.	—	5 0*	5 0*	5 0*	5 0*	5 0*
Crown Diamonds ..	3 3*	3 1*	3 9†	3 3†	1 9	2 0*
Crown Mines ..	40 0*	40 0*	—	—	37 6*	—
Daggafontein Mines	6 3†	6 0†	4 0*	3 9†	3 0	3 3
Do. Options ..	0 6†	—	0 3*	—	0 3†	0 3†
Durban Rood. Deeps	3 0†	3 0†	—	3 0†	2 0*	3 0†
East Rand Coals ..	—	2 3†	2 3†	2 3†	2 1*	—
East Rand Deeps ..	0 6*	—	0 7*	0 7*	0 7*	0 6*
East Rand Props.	5 0*	—	—	4 6*	—	—
East Rand Debs. ..	—	£71†	—	—	£71†	£71†
Eastern Golds ..	—	0 6†	0 6†	0 6†	0 6*	0 6*
Frank Smith Diam.	3 6	2 6	2 1	2 1	1 10	1 10
Geduld Props. ..	46 6*	47 0	47 3	46 9	45 9	45 9
Glencoe Collieries ..	11 0	11 0	10 9*	11 0	10 6*	11 3
Government Areas	76 0*	77 6	77 0*	77 0	76 6	76 6*
Hume Pipes ..	—	21 0*	—	22 0†	—	20 6*
Jupiters	3 6†	2 9*	3 0B	3 0*	—	3 5
Klerksdorp Props.	—	—	2 3*	—	2 3*	—
Knight Centrals ..	3 4*	3 4*	3 4*	3 4	3 3*	3 5
Knights Deep ..	11 0*	11 6*	12 0*	12 3*	12 6*	12 6*
Lace Props. ..	8 6*	8 6*	9 0	8 6*	8 6	8 6*
Leeuwpoort Tins ..	7 9	7 9*	7 9	7 6*	7 6	6 0*
Lydenburg Farms	5 9	6 0†	6 0†	6 0†	—	5 3*
Middelvlei Est. ..	1 1†	—	1 0†	1 6†	1 0*	—
Modder B's ..	28 0	27 9*	28 0*	27 9	27 6	27 0
Modder Deeps ..	39 6	40 9A	40 6	—	39 3*	39 9
Modder Easts ..	18 4½	18 3*	18 3	17 10½	17 6	17 6*
Do. Options. (4 yrs)	1 1*	1 0*	1 1	1 0*	1 0*	1 1
Modder Wests ..	—	—	—	—	—	2 0*
Natal Navig. Coll.	32 6*	32 0*	33 0*	—	32 0*	32 6*
National Banks ..	—	£11½†	—	£11½†	—	£10½*
New Eland Diam...	20 0*	21 0*	21 0	15 0	12 6*	15 0
New Era Cons. ..	—	7 3	7 0*	7 0*	7 0*	7 0*
New Geduld Props.	1 4*	1 4*	1 4*	1 4*	1 4*	1 6†
New Kleinfonteins	5 4*	—	5 6*	5 6*	5 3*	5 4*
New Modderftn. ..	63 6	64 0*	64 6	64 3	63 0	62 9
New State	23 9*	23 9*	23 9*	23 3	—	—
New Unifieds ..	5 0†	—	—	—	3 6*	4 0
Nigels	—	4 0*	4 0*	—	—	4 0*
Nourse Mines ..	7 0*	8 6†	8 6†	—	8 0†	8 0†
Premier Preferreds	110 0*	110 0*	110 0*	—	110 0*	110 0*
Pretoria Cements ..	58 3A	59 0*	59 9	59 0	58 0	57 9
Princess Estates ..	0 6*	0 6*	—	0 6*	0 6*	0 7½
Rand Collieries ..	1 6†	1 6†	—	1 6†	1 6†	1 6†
Rand Mines ..	—	—	—	45 0*	45 0*	45 0*
Rand Nucleus ..	1 6†	1 6†	1 6†	—	1 3*	0 6*
Rand Select. Corp.	—	43 9	—	—	—	50 0†
Randfontein Est. ..	12 6*	12 6*	12 6*	12 6	11 9*	11 6*
Roberts Victors ..	6 0†	4 6*	—	4 6	—	4 9
Rooibergs	3 0	3 3	3 3*	3 3*	3 3*	3 3
Roodepoort Uniteds	1 0†	1 0†	0 9†	—	0 7*	—
Rose Deeps ..	—	—	12 6*	—	—	11 0*
Rouxvilles	6 0†	6 0*	6 0*	6 0	6 3†	5 0
Ryan Nigels ..	4 0*	4 0*	—	4 0*	4 0*	4 0*
Simmer Deeps ..	0 3†	0 3†	0 3†	—	—	—
S.A. Townships ..	9 0*	10 10†	10 0†	—	9 6*	9 6*
S.A. Alkali ..	20 3	21 3	21 6*	22 0	21 0*	23 0*
Do. Options ..	4 0	4 3*	—	4 0	—	5 9†
S. Van Ryn ..	6 0*	5 0*	6 0	6 3†	5 9*	5 6*
S.A. Lands ..	4 6*	4 6*	—	4 4*	4 3	4 3*
Springs Mines ..	32 6	33 0*	33 3	33 0	32 9	32 0*
Sub Nigels	11 0	11 0*	11 0*	11 4*	11 3	11 0*
Swaziland Tins ..	—	—	—	—	5 0*	10 0†
Transvaal Lands ..	—	19 0*	19 3*	19 0*	19 0*	18 3*
Trans. G.M. Est. ..	10 0*	10 0*	10 0*	10 0*	10 0*	10 0*
Transvaal Silver ..	32 0	31 0*	30 3*	27 6	27 6	26 6
Union Corporation	17 0*	17 0*	17 0*	17 0*	17 0*	—
Victory Diamonds..	0 3†	0 3†	0 3†	—	0 3†	0 3†
Van Ryn Deeps ..	—	66 3*	67 0	66 6	65 0A	65 0*
Van Dyk	—	1 3*	—	1 3*	—	1 3*
Village Deeps ..	7 0*	7 0*	—	7 0*	—	—
Village Main Reefs	—	—	—	—	9 0*	—
West Rand Cons. ..	—	2 0*	—	—	—	2 0*
Western Rand Est.	2 10*	—	—	—	2 3*	2 6*
West Springs ..	15 0*	15 10*	15 10*	15 11	15 11	15 6
Do. Options ..	0 9	0 10*	—	—	0 6*	0 10*
Witbank Collieries	—	—	47 6*	—	44 0	46 0†
Wit. Deeps ..	—	—	—	—	6 6*	8 0†
Wolhuters	3 6	3 8*	3 9	3 7*	3 9	3 7*
Zaaiplaats Tins ..	4 0*	3 9*	3 6*	3 0*	2 9*	3 0
Union 5 per cent. ..	£96	£95½*	£95⅝	£95½	£96	£95½*

*Sellers. †Buyers. A Odd Lots. B ex London.

THE "OKILL" PATENT COMPRESSION AND IGNITION PRESSURE INDICATOR.

This is an invention which has just been put on the market by George Taylor (Brassfounders), Ltd., of Bolton. It consists of a cylinder with adjustable screw top, inside which is a vibration centre rod actuated by a spring. At the bottom is a screwed spigot to enable the indicator to fit into an adapter in the compression or ignition cylinder. On one side is a recorder showing pressure lbs. per square inch, and on the other a needle which indicates the violence of explosions or pressure escape. The pressure causes the rod to vibrate, and the top is thereupon screwed down until the vibration ceases, i.e., until the pressure from either end is equalised. The recorder responds to the pressure exercised from the top, and as both top and bottom pressures are now equal the actual pressure in the compression or ignition cylinder is thus obtained.

The Metal Trades.

We are indebted to His Majesty's Senior Trade Commissioner for a copy of the January Bulletin of the Department of Overseas Trade which contains much valuable information. In regard to the metal trades the journal states, inter alia:—

Iron and Steel.

Depression continues to obtain throughout the iron and steel trades. There is very little new business passing, as buyers are still pursuing a waiting policy in the belief that lower prices will soon be obtainable. Surprise is felt in some quarters that a general reduction in prices has not occurred before this, in view of the serious competition emanating from Continental makers. It is reported that in certain cases Belgian works have been successful in securing sufficient business to keep their mills engaged for two or three months, with the result that price-cutting from that quarter has not been quite so much in evidence lately. Most Continental works are, however, still keenly seeking new business, and the Germans in particular appear recently to have redoubled their efforts to obtain export orders.

Undoubtedly one of the main reasons for the small amount of export business offering at the present time are the unfavourable financial conditions prevalent in most of the overseas markets, and it is questionable whether, until an improvement occurs in this direction, a general fall in prices would succeed in attracting any considerable volume of orders. As makers approach the completion of the orders on their books it would seem that they will be forced to adopt one of two alternatives, viz., to lower prices regardless of manufacturing costs sufficiently to secure whatever business is available, or considerably to curtail production. The latter process is, in fact, already proceeding to some extent in a number of steel works, as manufacturers feel that in the existing circumstances it is difficult to compete with Continental producers, whose working costs are less than those ruling in this country, and whose export trade is so greatly assisted by the state of the exchanges. As regards pig iron, the majority of furnaces are now in full operation again, but the proportion of superior grade iron produced remains unsatisfactory. The output of Cleveland foundry iron is still insufficient to satisfy requirements of the home market, and export business is consequently not being considered. There is, further, very little export inquiry at the present.

The following particulars relating to the United Kingdom production of pig iron and steel in November have been furnished by the National Federation of Iron and Steel Manufacturers:—The production of pig iron, which, owing to the coal strike, fell in October to 533,200 tons, further fell in November to 403,800 tons. Included in this total are 133,500 tons of hematite, 130,000 tons of basic, 74,900 tons of foundry and 37,100 tons of forge iron. The production of steel ingots and castings in November amounted to 503,900 tons.

	Pig Iron		Steel Ingots and Castings.	
	1919. Tons.	1920. Tons.	1919. Tons	1920. Tons.
1st six months . .	3,954,000	1,145,000	4.264,000	4,877,000
July	641,000	750,600	618,000	789,900
August	521,000	752,400	474,000	709,200
September	581,000	741,000	718,000	884,700
October	445,000	533,200	433,000	544,300
November	624,000	403,800	695,000	503,900
Total 1st eleven months	6,766,000	7,326,000	7,202,000	8,309,000
December	632,000	—	692,000	—

Tinplates.

The proposal to fix a minimum selling price for tinplates, to which reference was made in the last issue of the "Bulletin," was considered at recent meetings of the Tinplate Conference, but was not agreed to. The figure suggested was 41s. 6d. pre basic box, and as this was an advance on current quotations, the possibility of the minimum price taking effect induced a fair amount of buying which has, however, since subsided. It is reported that most of the leading makers expressed their willingness to adopt a minimum selling price, but some of the smaller works were not disposed to agree, and intimated that it was their intention to cease production. Some of them have already taken this course and many of the South Wales mills are standing idle, with a consequent loss of employment to a large number of workers. It is understood that a further meeting of the Conference is to be held shortly. Very few of the works are at all well supplied with orders and as the amount of new business at present offering is not sufficient to keep all the mills engaged, it is obviously necessary to restrict output until conditions improve. A small amount of business is being done by merchant firms who hold stocks of plates, and transactions are reported to have taken place on the basis of 39s., and occasionally as low as 38s. per box. The price of steel tinplate bars has been further reduced by £1 per ton, making the current figure £17 10s., but tinplate makers will probably find little satisfaction in this, as even now it is doubtful whether they could produce at a profit at less than 40s. per box, which is a shilling or more above the figure at which plates are at present being offered.

Galvanised Sheets.

There have been rather more inquiries in the market recently than has been the case for some time past, but very little definite business appears to have resulted, and the market is in a depressed condition. Makers are badly in need of orders and are working short time. Present quotations are on the basis of £31 to £32 10s. for 24-gauge corrugated sheets in bundles, but even these low figures fail to attract buyers.

MACHINERY AND ENGINEERING TRADES.

According to the January "Bulletin" of the Department of Overseas Trade the engineering trades generally have been experiencing a rather quieter period during the past month, for although orders are still coming to hand fairly well, manufacturers are not so well placed in this respect as they recently were. It is, however, realised that at this period of the year a quieter feeling is usual, and opinion seems to be fairly strong that in the early part of next year an improvement in trade will be experienced. The efforts to bring about a generally reduced level of prices, of which mention was made in last month's "Bulletin," have met with a fair measure of success and reductions are noted in several instances. It is also worthy of note that in some cases manufacturers are now quoting fixed prices and have eliminated the variation clause, a fact which indicates that they have begun to accumulate stocks. The above facts point to conditions being very favourable at the present to the overseas buyer, for it is apparent that with the elimination of the variation clause and the indicated ability to deliver, to some extent at least, from stock and so avoid the long delays to which deliveries have so frequently been subjected in the past, two of the chief difficulties facing the overseas buyer have been removed, while the lower prices offer an additional incentive. The position is considered especially favourable in regard to the purchase of railway wagons, machine tools, agricultural implements, etc., manufacturers of which would, it is believed, be glad to receive inquiries. A development of some interest is the announcement recently issued by the Agricultural and General Engineers, Ltd., of Central House, Kingsway, W.C. 2, of their selling policy for the future. Firm prices are in all cases to be quoted, and delivery can often be made from stock. These conditions will be very welcome to overseas buyers, indicating, as they do, a step toward the abandonment of indefinite contract prices.

RHODESIAN SECTION.

Mineral Output in January.

DETAILED STATISTICS—LEADING PRODUCERS AND SMALL MINES—TOTAL VALUE £404,609—GOLD PRODUCTION £293,794—ASBESTOS OUTPUT STILL FORGING AHEAD.

The strike of Rhodesian miners and the lockout threatened by the mine owners place Rhodesian mines under a temporary cloud of depression. The alarming aspects of labour trouble in Charterland are dealt with elsewhere in this section, and we give hereunder a detailed table of mineral production in the country during the month of January. Numerous readers have asked for the publication of detailed statistics as to Rhodesia's mining output, and the following analysis shows the outputs of small as well as large mines. The value of the mineral output of Matabeleland in January was £404,609, of which gold contributed £293,794 and asbestos £41,514.

Summary of Mineral Production, January, 1921.

	Value.
Gold, 46,955·88 fine ounces	£293,794
Silver, 12,529·31 fine ounces	1,988
Coal (raised 50,534 tons)—sales	15,793
Ditto, used for coke and bricks	7,108
Copper (blister), 239·98 tons	16,744
Chrome ore, 5,284·96 tons	21,967
Asbestos, 2,500·31 tons	41,514
Arsenic, 34·40 tons	1,612
Tin, 2·77 tons	400
Mica, 13 tons 1,846 lbs.	3,546
Diamonds, 22·50 carats	143
Total	£404,609

N.B.—The value of the above includes £95,293 premium on gold.

Leading Producers in January.

	Value of January Output.
GOLD—	
Lonely	£22,258
Globe and Phoenix	30,268
Falcon	15,185
Shamva	34,321
Rezende	10,762
ASBESTOS—	
Birthday	10,381
Shabanie	10,796
Gaths	8,437
Nil Desperandum	6,602
COAL—	
Wankie	22,901
CHROME—	
Selukwe Chrome Mines	21,967

The Young Asbestos Industry.

JANUARY, 1921.

Bulawayo District.	Tons.	Value.		
Birthday A and B (Willoughby's Con. Co., Ltd.)	359·59	£10,381	6	10
Nil Desperandum (African Asb. Mining Co., Ltd.)	330·10	6,602	0	0
Pangani (J. S. Hancock), Dec.	15·00	334	16	6
Ditto, ditto, Jan.	14·85	331	10	0
Serpentine (African Asbestos Mining Co., Ltd.)	10·00	150	0	0
Shabanie (R. and General Asb. Corp. Ltd.)	407·83	10,195	15	6
Victoria District.				
Balmain (African Asb. Mining Co., Ltd.)	88·00	2,200	0	0
Gath's (R. and General Asb. Corp., Ltd.)	337·48	8,437	0	0
King Asbestos (Rhod.), Ltd.	937·96	2,881	15	3
	2,500·81	£41,514	4	1

CHROME ORE AT SELUKWE

MATABELELAND.

Bulawayo District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Abercorn (Abercorn G.M. Co., Ltd.) ..	5	746	603·91	2,536
Do. (sands)	—	375	139·75	587
Annasona (Annasona G.M. Co., Ltd.) — final clean up		—	7·80	33
Antelope (H. Harrington)	5 2P	946	300	1,285
Do. (concentrates)	F	—	25·86	109
Anterior (Anterior Synd.)	5	50	13·52	57
Anterior N. (do.)	(5)	60	12·6	53
Big Ben (W. E. Hunt)	2	150	45·50	191
Bill's Luck (Bill's Luck Synd.) Dec ..	5	190	39·49	166
Do. (sands)	—	338	26·30	111
Do. Jan.	—	240	36·23	152
Do.	—	351	25·58	107
Camp (Carson Mines, Ltd.)	5 1P	855	153·87	646
Do. (sands)	—	480	33·91	142
Celtic (A. W. Wilson)	3	303	83·27	350
Day Shift (E. Warren)	5	120	70·41	296
Discoveries (G. P. Hopkins) clean up..	—	—	4·53	19
Do. (sands)	—	225	28·57	120
Eldorado (J. F. Smith) Dec.	3	105	38·38	161
Do. do. Jan.	—	80	26·87	113
Fred & Fred 1 W (Trans. & R. Fst.) ..	10 4 P	1,550	890·05	3,968
Do. (sands)	—	1,550	391·35	1,733
Freda	3	311	71·00	298
Helen (Koodoo Synd.)	5	300		
Do. (sands)	—	200	82·66	347
Horn (Horn Reef Syn.)	10	844	151	667
Huntsman (Rhodesia G.M. & Investment Co., Ltd., ...	5	661	172·53	732
Do. (slimes)	—	401	79·01	355
Jessie (Jessie Tributors)	15 3P	1,970	315·03	1,323
Do. (sands)	—	2,300	220·49	926
Do. (battery chips)	F	—	15·38	65
Jumpers (E. A. Bills) slimes	—	95	21·68	91
Killarney (F. D. Roscoe)	10	473	160·36	673
Do. (sands)	—	375	38·75	142
Legion A. (W. H. Robinson)	5	300	62·92	264
Lochdale (W. G. Skinner) Dec. ..	5	200	50·77	213
Do. Jan. ..	—	110	34·23	144
Lonely Reef G.M. Co., Ltd.	20 3T	5,350	1,676·60	7,210
Do. (slimes)	—	5,350	3,519·99	15,048
New Eclipse (J. R. Stewart)	5 1T	1,112	448·75	1,885
Do. (sands)	—	500	40·62	171
Owl (Maclean & Toshack)	3	250	254·83	1,070
Queen's (Bembesi Dist. G. M., Ltd.) ..	10	324	38·05	160
Red Rose (Rewi Byo. Dev. Synd.) ..	10	460	351·73	1,477
Rewi (Rewi Byo. Dev. Synd.) (sands ..	—	780	108·45	455
Rhodesian King (R. Aserman)	5	599	144·14	605
Scoveni (W. H. & D. A. Burrows) ..	3	52	17·85	75
Submarine B (H. H. Williams) ..	5	22	53·86	226
Premiums, Aug. to Oct., 1920 ..				21,627
Bulawayo District Total			11,134·34	69,184

Gwelo District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Babs (Beach & Boby)	5	498	54·49	229
			95·75	402
Do. (sands)	—	204	60·63	255
Bertha B (H. H. Field) Dec.	3	322	33·28	140
Commonage (H. W. Gray)	1 T	456	68·69	288
Connemara (sands)	—	1,457	467·75	1,964
Conqueror (Leppington & McConkey) Nov.	5 1P	200	49·56	208
Csardas (Wolf-hall Synd.)	10	235	94·41	396
Danga (Cribb & Scear)	5 1P	640	159·32	669
Do. (sands)	—	418	37·57	158
Divide (J. Jones) Dec.	5	200	41·76	175
Dunraven Chrome A (J. Cruickshank)	F	—	29·95	126
Eva (Swanepool & Stocks) Nov. ..	5	121	48·21	202
Falcon Mines, Ltd. (with adj. Mar.)	28N 2T	15,301	2,803·12	11,773
Gaika G.M. Co., Ltd.	5 1C 1T	2,589	804·16	3,412
Do. (sands)		2,968	533·38	2,262
Glen Hume (Glen Hume Synd.) ..	5	850	73·30	308
Do. (sands)	—	1,395	53·94	226
Globe & Phoenix G.M. Co., Ltd. ..	40 12P	5,940	4,767·38	20,023
Do. (sands)	—	9,908	1,801·11	7,565
Do. (slimes)	—	2,400	638·15	2,680
Makokooshla (R. Sharkey)	5	200	56·64	238
Moss (James & Worthington)	5	756	512·00	2,151
Nib's Luck (G. M. Hughes)	Dolly	1	1·96	8
Primrose (J. M. Harris)	5	924	169·48	712
Do. (sands)		620	20·25	85
Reden (Reden Synd.) Dec. clean up ..	—	—	25·79	108
Riverlea (G. C. Hooper)	10	628		
Do. (sands)	—	232	64·27	270
Do. (slimes)	—	276		
Robin Hood (Gaika G. M. Co., Ltd.) ..	(5)	224	45·60	192
Royalist (J. Austen) sands		615	98·46	414
Sherwood (H. W. Gray)	3	476	88·87	373
Smith's Pocket (C. A. Abbott) ..	5	244	26·42	111
Strike (F. G. Shaw)	H	200	20·77	87
Torleven (Benney & Davey)	5	615	110·21	463
Veracity (L. R. Evans)	5	600	170·25	715
Do. (sands)	—	600	49·68	209
Woodend (Woodend Gold Mines) ..	5	319	51·23	215
Zabonkwe (W. Holmes) Nov.	5	842		
Do. (sands)	—	575	81·17	341
Do. (slimes)	—	267		
Premiums, Aug. to Dec., 1920.. ..				55,751
Gwelo District Total			14,309·05	115,904

MASHONALAND.

Hartley District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Acorn (R. H. Ulyett) (sands)		520	29·91	126
Big Boulder (Pope & Baker)	5	570	272·91	1,146
Do. Base Bar	—	—	16·56	70
Brilliant (Eureka Synd.) sands Dec. ..	—	800	41·98	176
Do. January	—	950	52·37	220

THE FALCON SMELTERS

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Cricket (F. C. Luxat)	H	520	177·96	747
Do. (sands)	—	460	54·77	230
Eileen Alannah Mining Co., Ltd.	6X	1,800	134·09	563
Do. (sands)	—	1,135	181·38	762
Gambusi (A. E. Ward)	5	100	30·85	130
Glendarra W. Ext. (C. S. Marks)	2	100	7·88	33
Glenorchy (R. A. Smith)	(5)	700	111·93	470
Golden Valley (John Mack & Co.)	10 1P	1,058	260·65	1,095
Do. (sands)	—	745		
Do. (slimes)	—	690	224·14	941
Grandeur (Grandeur G.M. Co.)	5	558	93·03	391
Help (C. G. Bennett)	C	560	65·73	276
Do. (sands)	—	320	31·53	132
Hepworth No. 1 (J. W. Barnes)	5	357	26·94	113
Heroine (Westoe Synd.)	3	125	58·45	245
Do. (sands)	—	150	17·51	74
Hope (Hope Synd.)	5	600	107·09	450
Do. (sands)	—	450	11·61	49
Horseshoe (J. D. McCullum) sands	—	840	26·74	112
Inkerman (I. J. Minaar)	(5)	220	58·63	246
Do. (sands)	—	160	14·09	59
Kanyemba (Kanyemba Synd.)	10 H	560	252·18	1,059
Do. (sands)	—	420	36·28	152
Mali (J. Thornett) (sands)	—	980	45·82	192
New Invincible (I. J. Minaar) slimes	—	280	34·41	145
Newington 2 (J. M. Kerr)	2	63	15·16	64
Nut (J. Aronowitz)	5	280	40·40	170
Do. (sands)	—	330	14·52	61
One Step (W. Miller) Dec. (sands)	—	240	29·68	125
Do. Jan.	2	200	19·43	82
Do. (sands)	—	240	29·68	125
Owl (A. Rolfe)	10	796	189·77	797
Do. (sands)	—	793		
Do. (slimes)	—	133	99·35	417
Oxo (Trixie, Ltd.)	5	591	79·26	333
Peacock (E. Jessop)	(3)	88	9·77	41
Pen A (H. F. Wilson)	(5)	14	4·26	18
Revie (Ambrose & Atkinson) Dec.	5	550	91·22	383
Do. (sands) Dec.	—	400	24·74	104
Do. Jan.	—	600	123·15	517
Shepherds (Begbie & Jackson)	10	780	179·43	754
Do. (sands)	—	690		
Do. (slimes)	—	280	157·45	6·61
Skipper (W. H. Chapman) pan	—	—	1·03	4
Tom Tit (J. A. Clesham)	2	110	31·48	132
Trafalgar (J. Thornett)	5	601	109·36	459
Tssessebe 2 E Ext. (Ullyett, Cribb & Secar)	10	1,346	389·1	1,634
Do. (sands)	—	1,246	131·70	553
Turkois (J. Mack & Co.)	10 2P	1,275	260·77	1,095
Do. (sands)	—	1,275	196·96	827
Washington (I. J. Minaar)	5	220	58·63	246
Do. (sands)	—	160	14·09	59
What Cheer (H. Moser)	10	592	262·79	1,104
Do. (sands)	—	685	50·71	213
Windom (H. McClellan)	2	160	26·31	111
Hartley District Total			5,117·65	21.493

Lomagundi District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Anglian (F. L. Standen) Aug.	5	207	41·45	174
Eldorado (Austen & Eaton)	5 1T	934	155·42	653
Eureka (F. K. Brown)	5	280	25·49	107
Maggiemac (J. McMurdon)	5	465	116·33	488
Do. (sands)	—	400	29·96	126
Premiums—Aug. to Oct., 1920	—	—	—	3,434
Lomagundi District Total			368·65	1.982

Mazoe District.—

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Promoter 1 (F. C. Croxford)	C	2,420	69·05	290
Do. (sands)		2,000	80·60	339
Rosa (R. Aserman)	C	—	42·01	176
Do. (sands)	—	—	13·47	57
Rothschild (Cunningham & Allison)	1	365	106·71	448
Premiums—Aug. to Oct., 1920	—	—	-	1,952
Mazoe District Total			311·84	3,262

Salisbury District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Alluvial (T. A. Litchfield) Nov., 1920	—	—	3·06	13
Alliance (Alliance Trib. Syn.)	5	—	117·76	495
Arcturus Slate (Goldfields Rho. Dev. Co., Ltd.)	20 2C 1T 2P	5,750	794·12	3,335
Do. (slimes and sands)	—	5.750	1,741·12	7,313
Arwee (F. Johnsen)	2	12	14·44	61
Beatrice (New Beatrice G.M. Co., Ltd.) (slimes)	—	1,200	82·73	347
Downton (J. A. Moore)	5	452	176·06	739
Joking (W. C. Harrison)	8	270	301·44	1,266
Do. (sands)	—	140	41·83	176
Joyce (B. Ellsmoor) (sands)	—	510	81·71	343
Juno (Santa Claus Synd.) Jan.	5	246	54·56	229
Do. (sands)	—	220	50·18	211
Do. Dec.	5	320	59·55	250
Do. (sands)	—	250	48·88	205
Nonpariel (Non-Pariel Syndicate)	5	311	46·60	196
Shamva Mines, Ltd.	56N 11T	50,700	2,281·63	9,682
Do. (sands)	—	28,624	5,811·11	24,639
Do. (slimes)	—	21,691		
Spion Kop (W. G. Appis)	(5)	75	17·65	74
Tip Top (Jumbo G.M. Co., Ltd.)	10	790	343·63	1,443
Top (Harrison & Rooke)	5	780	281·16	1,181
Trio (Trio Synd.)	5	384	126·52	531
Do. (sands)	—	304	19·51	82
Other Sources	—	—	·24	1
Premiums—Aug. to Oct., 1920	—	—	—	7,056
Salisbury District Total			12.495·49	59,868

Umtali District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Kent (R.M.S. Syn.)	5	600	136·92	575
Do. (sands)	—	495	26·36	111
Liverpool (Est. R. G. Snodgrass dec.)	10	400	73·55	309
Do. (sands)	—	240	38·34	161
Montezuma (J. Meikle)	5	160	40·59	170
Do. December		200	28·02	118
Rezende DB 1 (R.P. Synd.)	10	1,550	104·30	438
Do. (sands)	—	500	24·12	101
Rezende Mines, Ltd.	40	5,500	1,571·27	6,667
Do. (sands)	—	3,288	290·66	1,233
Do. (slimes)	—	1,900	286·39	1,215
Do. (concentrates)	—	141	388·11	1,647
Umtali (J. Meikle) Nov., Dec., Jan.	5	796	127·81	537
Do. (sands)	—	250	59·50	250
Premium	—	—	—	4,196
Umtali District Total			3.195·94	17,728

Victoria District.

	No. of Stamps.	Tons Treated.	Yield Ozs.	Value. £
Nellie (D. Laing) Nov. (sands)	—	450	17·97	75
Do. Dec. (sands)	—	120	4·95	21
Premium—Aug. to Oct., 1920	—	—	—	1,277
Victoria District Total			22·92	1,373

(P) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Huntington Mill, (GR) Gates Rolls, (B) Ball Mill, (Pn) Pneumatic Stamp, (X) Nissen Stamp, (C) Chilian Mill, (RP) Roasting Plant, (F) Treated at Falcon Mine, (WM) Waterfall Mill, (LM) Lane Mill, (EP) Experimental Plant.

Lead Production.

Lead production during 1920 is summarised as follows:—The production of primary domestic de-silverised lead was about 215,000 tons, of soft lead 189,000, and of de-silverised soft lead 70,000 tons, making a total output from domestic ores of about 474,000 tons of refined lead, compared with 424,433 tons in 1919, made up of 208,751 tons of de-silverised lead, 147,744 tons of soft lead, and 67,938 tons of de-silverised soft lead. The output of lead smelted and refined from foreign ore and bullion was about 64,000 tons, compared with 57,787 tons in 1919. The total lead smelted or refined in the United States was thus about 538,000 tons, compared with 482,220 tons in 1919. The production of antimonial lead was nearly 12,000 tons, against 13,874 tons in 1919. The exports of lead of foreign origin were about 22,500 tons, and of lead of domestic origin 3,000 tons, compared with 42,912 tons and 10,510 tons respectively in 1919, a decline of nearly 28,000 tons in the total exports. The imports of refined pig-lead, which for the year 1916 to 1919 inclusive had been a little over 5,000 tons per year, jumped to about 34,000 tons. Up to the end of November 9,425 tons of refined lead had come in from Mexico, 1,680 tons from France, and 12,978 tons from England. Some trans-shipped Spanish and Australian lead is included in these quantities.

Charterland and General Exploration.

NEW COMPANY TO BE FORMED.

The ordinary general meeting of the Charterland and General Exploration and Finance Co., Ltd., was held on January 24, at the Cannon Street Hotel, E.C., Mr. Edmund Davis (the Chairman) presiding.

The Chairman, after dealing with the accounts, said: We have, in accordance with custom, set out in the report a list of the important holdings on January 15, and only consider it necessary to draw attention to the satisfactory results being obtained by the Rhodesian General Asbestos Corporation, which made a profit of £189,630 in its financial year ended March 31, 1920, and declared dividends of 25 per cent. for the period in question. The corporation has also paid 15 per cent. in interim dividends for its current financial year.

We have increased our interest in the Rhodesian and General Asbestos Corporation, and have also considered it advisable to add to our holding in the Cape Asbestos, and have guaranteed the reconstruction of the King Asbestos (Rhodesia), Ltd., in which reconstruction we have ceded participations to some of our friends. As far as this reconstruction is concerned, a new company will be formed in the course of a few days to take over the whole of the assets and liabilities of the existing company, for which it will allot 124,898 fully-paid shares of 10s. each, and we have guaranteed the subscription of an issue of 75,000 additional shares of 10s. to the shareholders of the King Asbestos (Rhodesia), Ltd., and have undertaken to subscribe an additional 25,000 shares of 10s. each, and have further offered to take over at par, within a certain time, any of the 124,898 fully-paid shares issued to the vendors.

For the guarantees and obligations referred to an option has been obtained to acquire from the new company 50,000 shares at par for one year from its date of incorporation, and an additional 50,000, also at par, for two years. We have, of course, had the property reported on by our consulting engineer, who will control the operations of the new company, and we are satisfied that under the new management satisfactory returns on the capital invested should be made.

The chairman then dealt with the Excess Profits Duty in relation to the value of the company's assets, and explained the reasons for the heavy loss made on the reconstruction of the company. Continuing, he said: In reference to the scheme, the issued capital of the old company was £344,500 in shares of £1 each, and on its reconstruction the shareholders were given one and a half new shares of 5s. each in the present company for each £1 share in the old, and therefore not only made a loss of 12s. 6d per share, but in addition subscribed 138,501 shares of 5s. each at par, which therefore makes the present issued capital of 655,251 shares of 5s. each at a cost, including the new money put in, of £379,125 5s.

As soon as the country is rid of excess profits duty we intend to call a meeting of shareholders to consider the formation of a new company, which would issue capital to replace the £379,125 5s. referred to, and, so that the scheme should be simpler in its framing and carrying out, the capital of the new company would be divided into shares of 5s. each and 1,516,501, or, roughly, 2½ shares issued for one in the present company. We have valued our assets on the basis of market prices when quoted and, when not, at our valuation but not above cost, and have placed a value of £1 per share on our holding in the Rhodesian and General Asbestos Corporation, this being the valuation we adopted last year and mentioned at our meeting. The valuation on this basis, including cash, loans and debtors, and after deducting creditors, amounts to £420,205—(hear, hear)—which is equal to 12s. 10d. per share.

The chairman then moved the adoption of the report and accounts. Mr. Lomas seconded, and the resolution was carried unanimously.

The proposed alterations in the articles of association were unanimously agreed to.

THE STRIKE IN RHODESIA. COKE TRUCKS HUNG UP AT BROKEN HILL.

Strikes and Lock-Out.

According to a Reuter telegram, dated Bulawayo, Wednesday, the air is full of rumours as to more serious troubles arising from the strikes and lock-out which has resulted in the closing of almost all the mines. At the time of wiring it was reported that the asbestos workers at Shabani had come out. The local branch of the Amalgamated Engineers' Union held a meeting the previous night, but the result had not been divulged. The executive of the Railway Workers' Union also met the same evening, and summonded a meeting of Bulawayo railwaymen for the following evening. This activity is presumed to be due to the intimation by the management that retrenchment will be necessary owing to the curtailment of traffic due to the stoppage of mining.

New Large Wagon-Building Works.

One of the largest British railway companies is now engaged on a project originally decided upon before the War—the construction of large wagon-building works. Equipment is being installed for manufacturing all the woodwork and for assembling all the wagon parts; and when the arrangements are completed they will include plant for the production of the whole of the ironwork as well. The capacity of these new shops will be equal to an output of 11,000 standard 12-ton open goods wagons per annum.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION — IRON AND STEEL — TIMBER AND BUILDING MATERIALS — ELECTRICAL GOODS—BRITISH EXPORTS AND FOREIGN COMPETITION—UNION AND OVERSEAS COAL—NEW RUBBER MILLS IN NATAL—PREMIER AND DE BEERS RETRENCHMENTS.

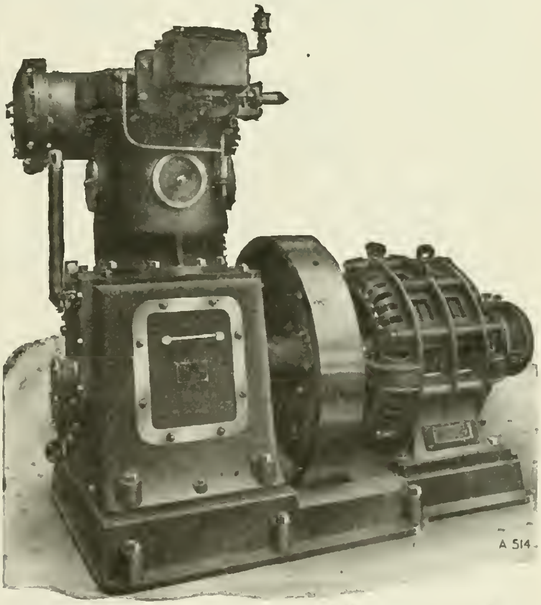
General Position.

Business during the past week was inactive. Inquiries on the Commercial Exchange have of late been very meagre and prices quoted very competitive and really below market values of replacement. Merchants are now waiting for the mines to open up buying, and, with their large stocks, the former are naturally anxious to turn them over; the only factor to-day is to get orders. The monetary position, in the opinion of good judges, is gradually improving, and the present pressure will, it is anticipated, be relaxed in the near future. The feeling is that we have now turned the corner and are heading for better times. Naturally, it will take a little time before any radical improvement can take place, but it is generally thought that we have now got over the worst of our troubles. Prices, on the whole, are still inclined to sag; heavy lines in mining materials are all more or less inclined to weaken. A very shrewd and far-sighted importer is of opinion that Home manufacturers have now about touched bottom in their quotations, and that reductions all round will shortly be seen.

Iron and Steel.

Business is picking up again after one of the quietest months known for some years, and prices are, if anything, firming up. Continental steel plates and bars are arriving, but the quality is very inferior, especially the Belgium, and engineers do not willingly accept that material if they can get British or local manufacture. Mild steel has dropped 2s. per 100 lbs. to 43s.; drill steel is down ¼d. per pound. One firm is selling Continental steel plates, of a very poor quality, at 37s. 6d.; the standard price for British is from 40s. to 45s. There is every probability of Continental steel plates going still lower. Imported mild steel ranges from 50s. to 80s.; imported iron, 42s. 6d.; nuts and bolts, 1s. 6d. per lb. for ⅜ in.; 90s. for ½ in.; 75s. for ⅝ in.; 67s. 6d. for ¾ in.; 62s. 6d. for ⅞ in. and 1 in.; brass rods, 1s. 9d. to 2s.; brass plates, 2s. 6d.; brass sheets, 2s. 6d. to 3s. per lb.; tubing, 3s. 6d. to 4s. 6d.; shafting, 8d. to 9d.; drill steel, 7½d.; hollow, 1s. 1½d; wire nails, 50s. to 65s., according to length; shovels, 65s. to 85s.; wheelbarrows, 67s. 6d. to 72s. 6d.; picks, 4 lbs., 45s.; 5 lbs., 55s.; 6 lbs., 70s.; 7 lbs., 75s.; pick handles, 35s.; barbed wire, 33s. 6d. to 50s. per 98 lbs. of 500 yards; wire fencing, 2 in. mesh, 6 ft., 50s; 5 ft., 42s. 6d; 4 ft., 38s.; 3 ft., 55s.; 2 ft., 30s.; screening, 10s. to 3s. per square yard, according to quality. Dunswart, 33s. Union Steel Corporation. Humanum est errare. In last week's notes inadvertently manufacturer's instead of merchants' prices prices were quoted. The latter are 40s. for large sizes, flats, rounds and squares; 41s. 6d. to 43s. for angles; and 41s. 6d. for smaller sizes in rounds.

A cable has been received quoting Scottish Crown at £23 basis f.o.b. for bar iron; Staffordshire, £27 to £28 basis; shafting, bright turned mild steel, £42; in each case delivery within a few weeks of placing the order, which compares very favourably with three months ago, when no delivery could be guaranteed. Continental mild steel, £14 f.o.b Antwerp. Another offer is £15 15s., which shows that the British mills have got to come down in price quite a lot to meet the Continental competition. According to the "Trade Journal" Belgium makers state that they are working at a loss. Of course this cannot continue. British mills anticipate more business shortly, and that prices will increase. Although numerous works have closed down, quite a number have restarted operations, and it is thought, judging from the present political and labour outlook, that the mines have nothing now to worry about and can go straight ahead; the great factor, of course, being the price of gold. Owing to repeated inquiries regarding the present position of the Newcastle (Natal) Iron and Steel Works, we have interviewed one of the directors of that company and have received the following information. The Newcastle Iron and Steel Works are still actively engaged in constructing and assembling their plant and buildings, which are nearing completion now that labour is plentiful. It is anticipated that production of pig iron will begin before many months are over. Owing to the scarcity of scrap cast iron, and consequently high prices ruling, there is a constant and big demand for good quality pig iron at a reasonable price. It is expected that the Newcastle Iron and Steel Works will be selling their products at about the present price of scrap cast iron, which will, of course, mean a



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tremendous thing to foundries and kindred trades. Notwithstanding the lower price of pig iron overseas, the local works, with their pull in respect of raw material, etc., are bound to compete with it very favourably indeed in regard to price, and it is confidently anticipated that eventually their products will cost less than anywhere else in the world.

The London *Times* reverts to a proposal of the leading iron and steel firms in Britain uniting to purchase the control of the British Empire Steel Corporation, which is an amalgamation of the three most important Canadian enterprises, and making the capital £5,000,000. An issue of £1,000,000 will be subscribed privately by the British companies interested, no public issue being made. It was originally intended to merge the various shipbuilding concerns with this combination, but the project has now been abandoned. The scheme has for its object the making of Belleisle the great source of supply for the British iron and steel industry, in order to accelerate its development. The British works are to be provided with iron in the various stages of preparation suited to their requirements. The north-east coast steelmakers have further reduced prices from between 30s. to 60s. per ton. Heavy rails, which cost £25 per ton two months ago, have now dropped to £18; ship plates, which were previously £21, are now £17 10s.; while joists are £16 instead of £21. Twenty more tinplate mills in the Swansea district have close down. The present output is 25 per cent. below normal.

Wages in the steel industry in America are being cut by independent firms from 10 to 20 per cent., but the Steel Corporation is maintaining war-time rates. The Inland Steel Company, after being shut down for months, has re-started work at 1918 rates of pay. The Bethlehem Steel Works are cutting down wages 10 to 20 per cent., and the Stanley Iron Works, Bridgewater, 15 per cent. In Cincinnati structural steel industries have reverted from the 6s. to 4s. per hour scale. In copper mining wages at Butte, Anaconda, and Great Falls (Montana) have been reduced by 5s. a day from 28s. to 23s. In the lead district of South-Eastern Missouri there has been a cut of 20 per cent. In fact wage reductions have been general in pretty nearly all industrial concerns in America.

The President of the Federation of British Industries, Sir W. Peter Rylands, said he thought we might confidently expect that the exchange in the United States would not move against Britain to a greater extent than it had already done. The Continent, especially Germany and Belgium, was pursuing a policy of inflation; both countries were consuming more than they were producing, to the detriment of the mark and franc. The wages paid in Germany and Belgium were less than half those paid in Britain, and yet the standard of living enjoyed by the men was not substantially different. Before the War the wages paid in Germany and Belgium were much about the same as in Britain. Even then we competed with difficulty in many of our important industries with those countries; to-day they are offering goods at about half of the cost to British manufacturers. He was afraid that for the next few months Britain would be faced with considerable difficulties in regard to her industries, which courage and determination alone would enable her to surmount.

Industrial Crisis in Rhodesia.

Work on all the Rhodesian mines has stopped as the result of the disputes between the mine owners and the Rhodesia Mine and General Workers' Association and the Amalgamated Engineers' Union. The men have declined to give the guarantee asked for.

Timber and Building Materials.

Timber is again a shade easier; stocks are good and consignments continue to arrive freely; business is fair. 3 x 9 deals rule at 1s. 9d. to 1s. 10d.; scantlings, 1s. 7d. to 1s. 8d., a fall of ½d.; beaver board, 5d. to 5½d., a similar drop; floorings, 10d. to 10¼d.; ceilings, 7d. to 7¼d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d., a fall of 1s.; corrugated iron, 11d. to 1s. 1d., is somewhat firmer; furniture timber: Japanese oak, 1s. 10d. to 2s. per sq. ft.; Burmah oak, 21s. 6d. to 23s.; American oak, 1s. 9d. to 1s. 10d.; one-inch boards, 25s. per cubic ft.; American black walnut, 1s. 10d. to 1s. 11d.; West African mahogany, 2s. 2d. to 2s. 3d. per sq. ft. Bricks, pressed and wire cuts, 60s. to 75s. per 1,000, according to quality; damp course and roofing, 1 ply, 40s.; 2 ply, 52s. 6d.; 3 ply, 65s.; cement, 11s. 6d.; white lime, 7s.; blue lime, 4s. 6d. per bag.

In the second-hand iron and timber yards business is a little better and material is coming in in small quantities; second-hand iron is selling at 8d., and timber at 1s. 4d.

It is understood that despite the trade unions' refusal to agree to dilution the National Federation of Building Trade Employers has, at the instance of the British Government, agreed to accept 50,000 ex-service men.

Electrical Goods.

Things, dealers say, are moving now, business is improving and orders are coming in fairly freely from outside. With the exception of half-watt lamps and screw tubing, stocks are full and material is arriving in fair quantities. Prices are fairly firm, but in some lines slight reductions are coming into force as, notwithstanding the high cost of raw materials, wages on the other side are coming down. For instance, tubing, which six months ago was about 40s., and had been as high as 50s., is now selling at from 24s. to 27s. 6d.; screw tubing, for use in concrete work, is still very scarce and is as high as 45s. to 48s. for ⅝ and 60s. to 65s. for ¾. This material is very hard to get at Home. Contractors, who formerly held out for £2 to £3 a light, are now prepared to do the work for 32s. 6d. to 40s., which latter level is about that obtaining at Home. Dealers are of opinion that the present cut in wages overseas, which seems likely to continue, will eventually mean rather far-reaching reduction in electrical materials.

British Exports and Foreign Competition.

In the House of Commons Mr. Kelleway stated that British exports in Empire markets had been adversely affected last year by the scarcity of British coal for export. American and Japanese competition had also proved very formidable competitors, particularly in respect of cheaper American railway material, motor cars, tinplate, and Japanese textiles and hardware, which disadvantages, however, had been counterbalanced by the ability of British manufacturers to quote firm prices and definite dates of delivery. Mr. Kellaway was of opinion that severer competition from European countries must shortly be expected. The proportion of British exports sold within the Empire showed a continuous and gratifying increase; 40 per cent. of the exports went to Empire markets in the last quarter of 1920 compared with 37 per cent. in the corresponding period of 1913.

Lower Freights.

During last year freights fell from 25s. to 7s. 6d. Heavy losses have recently been incurred in the running charges of ships, as with the exception of coal all other expenses have risen. No orders, it is stated, have been booked by British shipbuilding firms since the beginning of the year. Many forward contracts have been cancelled by reason of the high cost of building and the low freights.

Decontrol of Coal in Britain.

The Miners' Federation have protested against the decontrol of the coal trade, which it was announced was to take effect from the 1st inst.

Coal Export Trade.

Mr. R. A. Rouillard, managing director of the Inyati group of collieries in Natal, gave some interesting evidence last week before the Coal Commission. He favoured the matter of grading by the Government. During his recent visit to England he noticed when in touch with shippers and others interested in coal, that they thought the present price was too high, that a tremendous delay occurred in the harbours, and that they did not want pooling. He was against compulsory pooling by the Government, and any pooling should be voluntary. He thought the Government should go into the question of greater storage capacity at Durban and possibly Delagoa Bay, as a storage capacity of 10,000 tons at a port like Durban, where they are spending millions on the harbour, graving dock, etc., was [illegible]. It should be at least 50,000 tons he thought. He was confident that the Union would soon have a very large export trade. All conditions in Britain today tended to increase the price of coal at the pit head, and with our cheap native labour and probable increase of mechanical appliances we should be able to turn out coal at considerably less cost than in Britain. The whole of the Eastern market—Colombo, the Straits Settlements, the Persian Gulf, and probably also to a limited extent South America—should be available to South African coal. At the moment, he said, Welsh coal was being sold at Singapore cheaper than South African coal, which showed the position we were in as regard heavy freight charges, etc.

New Rubber Mills in Natal.

We are pleased to welcome another South African enterprise. Last week the South African Rubber Manufacturing Co., Ltd., opened their new india-rubber mills at Howick. The new mills are constructed of a framework of steel, filled in with cement. The new enterprise will manufacture various articles of rubber, such as rubber pavements and tiles, boot soles and protectors, buffers, etc. The necessary power to operate the machinery comes from the famous falls. A small village has grown up in the vicinity of the works and land has considerably advanced in value.

Anglo-Persian Oil Company.

This company is increasing its capital by £15,000,000, in order to render all branches of the business independent. The company's profits for last year were nearly two and three-quarter millions sterling, while next year it is estimated that they will exceed four millions. The company's output of oil is increasing rapidly.

Alcohol for Power Purposes.

The Empire Motor Fuels Committee states that tests are well advanced for the production of new standard denaturants for world-wide use. Of the substances already investigated those which apparently best comply with the formulae are redistilled bone oil and light caoutchoucine shale oil products. An engineering sub-committee has been appointed to investigate the development of the power alcohol engine and alcohol excise restrictions. Commissioners are being appointed overseas to collect information as to the possible production of power alcohol within the Empire.

The Premier Diamond Mining Company.

Although the financial results as disclosed at the annual meeting of this company were highly satisfactory as regards the previous year, the chairman, Sir Thomas Cullinan, had to confess that the prospects for the current year were by no means good, owing to the falling off in the demand for diamonds. Everything, he said, pointed to a very lean year in front of shareholders. From 1st March it had been necessary to restrict operations at the mine to the working of one shift only and the consequent retrenchment of some 250 employees.

De Beers Diamond Mining Company.

This company, consequent on the great falling off of sales of diamonds during past months, has decided to retrench 500 of their white men, closing down temporarily the Wesselton mine, to await a better market as soon as the present glut of diamonds shall have been worked off. This means a big blow to Kimberley, and, together with the nearer home retrenchment at the Premier mine, is very unwelcome news to the Union with its present over-full ranks of unemployed. The workers thus thrown idle comprise miners, mechanics, carpenters, engineers, fitters, moulders, electricians, and other full-trained men.

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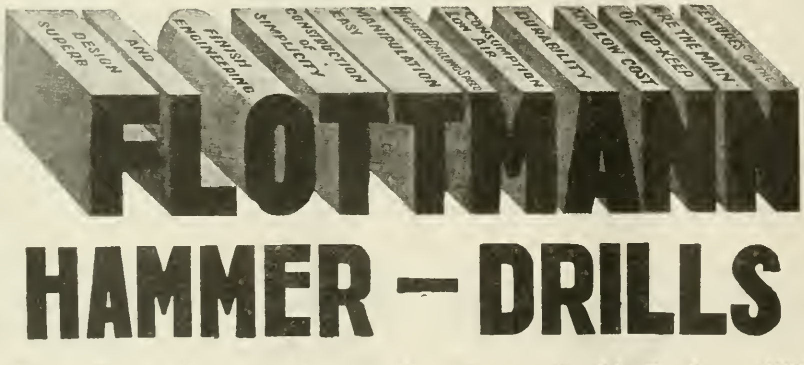

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Vol. XXXI., Part I.] JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 12, 1921. [No. 1537

Where the Big Rhodesian Strike Started.

The Shamva Mines: A remarkable photograph exhibiting one of the huge open stopes at the Shamva property, where the recent Rhodesian industrial trouble started. At the moment of writing the lock-out continues, and the Rhodesian mine owners are standing fast on the principle that, as a preliminary to any conference, they must have a guarantee that, while being prepared to recognise trade unions, they should not be dictated to as to whom they should or should not employ.

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REDUCTION OF WORKING COSTS.

VALUABLE LETTER FROM MR. WESTON—"TERRIBLE POSSIBILITIES OF THE SITUATION"—AN IMMEDIATE CONFERENCE URGED—SHOULD MYNPACHTS BE DEFINED?—THE SPECTRE OF GROWING UNEMPLOYMENT—REDUCTION OF WORKING COSTS THE ONLY SOLUTION—HOW EXPENSES HAVE RISEN—LAST MONTH'S ABNORMAL FIGURES—THE VILLAGE DEEP'S ACHIEVEMENT.

We print hereunder a letter which we have received from Mr. E. M. Weston, Consulting Mining Engineer of this town, on a subject of such grave importance to the whole community that we feel certain the views expressed therein will receive general consideration. Mr. Weston is a former Lecturer in Mining at the Transvaal University College and an ex-Rand Mine Manager and School of Mines graduate. He is at present unconnected with any big mining house or controlling group and has written us this letter without any personal axe to grind. The motives which impelled Mr. Weston to express his views are motives which must appeal to every sane thinking man in this country.

There can be no question whatever as to the serious outlook which confronts the various branches of the mining industry of the Union at the present time. Many of the low-grade mines of the Reef are in jeopardy, diamond and base metal properties all over the country are closing down or greatly curtailing operations, the outlook for mining expansion in any direction is bad, the situation on the diamond diggings is appalling and unemployment is increasing.

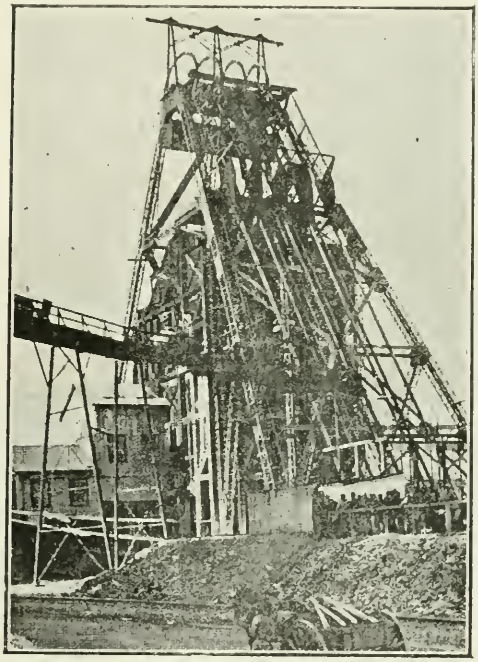
Under these circumstances we heartily agree with Mr. Weston that this is no time for Commissions or other procrastinating remedies. The mining industry requires immediate relief on a large scale and Mr. Weston's well-reasoned letter is commended to the attention of the Government and the captains of industry in whose hands our destinies repose.

THE MINING SITUATION.

To the Editor, "S.A. Mining Journal."

Sir,—One cannot help being doubtful if the general public realise the terrible possibilities of the situation as regards the Rand and all South Africa. The closing of the East Rand Proprietary Mines would be a national disaster turning the East Rand into a wilderness and ruining thousands. The state of affairs on the West is no better. People seem to have heard of the evil day so long that they refuse to believe that it is surely drawing nearer unless something can be done and done quickly. Even to-day mad political action threatens to divide the workers and hasten their day of ruin. The situation is fraught with such dire possibilities that it calls for immediate action and the greatest possible sacrifices on the part of the workers, the Government and the Chamber of Mines if any good work can be done. A Conference presided over by the Premier should be held at once to discuss the situation and see if some plan for reducing costs and prolonging the lives of the mines cannot be evolved. I would suggest that the Chamber of Mines grant a working week of five days of nine hours with a basic wage and bonus increase based on production per man and price of gold. That the mines be worked six days of nine hours, there being a relieving miner and men to take their day off in rotation during the week. This will interfere with sport; but better that than ruin. That the Government make sectional strikes a penal offence and amend the mining regulations where necessary. Though State Mining be not recommended it is the duty of the Government to prove the value of the areas being held in the East Rand and for that purpose all mynpacht owners be compelled to at once define their areas. That the Government, after taking the best advice, begin at once the sinking of as many shafts as may be justified in order to prove the value of this national asset and to provide work for the unemployed. When one realises that the West Springs Mine is the only one with an active shaft sinking policy in progress, the terribly backward state of development is apparent. Mines like Daggafontein should be helped to get into better areas of ground which no doubt exist. Only by measures such as these, conceived in a spirit of give and take, and applied quickly without hindrance and obstruction by sectional interests can ruin be averted. General Smuts is the man who alone can exercise influence enough to deal with the situation. There is no time for Commissions. A Conference between all the interests affected and instant legislation on lines there agreed upon can alone avert disaster in which the agricultural interests, which look to the Rand for their market, will also be involved.—I am, etc.,

E. M. WESTON.



At the East Rand Proprietary: A Big Group of Mines now running at a loss on account of high working expenses.

With the general spirit of this communication we find ourselves in agreement. The situation in the mining industry is unquestionably grave and calls for immediate action.

Whether Mr Weston's suggestion that there be a 5-day week of nine hours with a relieving shift to take their day a week " off " in rotation will meet with the approval of the Labour Party is rather debatable. Trades unionists are wedded to a policy of an 8-hour day and any attempt to interfere with Labour's decree that the 24 hours shall be divided into equal proportions for work, sleep and play would probably be denounced as slavery, no matter if such a departure from the workers' Magna Charta meant employment for more men and the salvation of low-grade mines which are now in jeopardy. The basic wage plus bonus suggestion is a good one; in fact, any reasonable suggestion is welcome in these precarious times.

Steps for the Government to Take.

We agree that legislation should be introduced which would make sectional strikes a penal offence. We understand that the recently-formed South African Mine Workers' Board is in favour of this. We agree, too, that the Government should take steps to secure the exploitation of the unworked areas of the Far East Rand, which are potential gold bearers.

To the east and south-east of Daggafontein there are over 30,000 claims which are presumptively banket bearing and although a good proportion of this ground may not be profitable there are huge tonnages which in all probability do contain ore which will yield dividends. But these auriferous conglomerates will require vast sums of money for their exploitation and whilst it is in many ways an excellent suggestion that all mynpacht owners be compelled to define their areas it is not much good locating mynpachts if the money to exploit the gold contents of these mynpachts is not available.

A Suggested Conference.

When Mr. Weston advocates a Conference, presided over by the Premier " to discuss the situation and see if some plan for reducing costs and prolonging the lives of the mines " he has, we think, hit upon the crux of the matter. The costs of operation on these fields to-day are so high that the opening up of new areas is not a proposition attractive to capital. And without capital, neither the Government nor anybody else can open up a Far East Rand gold mine.

How to Make the Rand Attractive to Capital.

Without capital and plenty of it an undeveloped Far East Rand block of claims is as futile a thing as a sailing ship without sails, a bank without money or a controlling house without brains. If we can reduce working costs to somewhere around a level of expenditure approximating to the half-way line between pre-War expenses and the present inordinately extravagant measure of monthly outlay the low-grade mines may yet, even in the face of a decline in the gold premium price, remain at work and capital might be induced to look with favour upon the great unexploited areas of our Far Eastern annexe.

Premium and Costs.

The selling price of our product remains around five guineas at which figure numerous mines are, at the present rate of costs, unable to market their output except at a loss. The seasonal incidence of the American harvest may later on in the year tend towards an advance in the price of gold, but it will drop again and the tendency each year will be more towards normal for some time to come. The gold premium does not do away with the necessity for reducing working costs on these fields. In several recent issues we have referred to the very great appreciation in working costs on Witwatersrand mines in the past six years, and further to amplify this assertion we give hereunder a table setting forth the working costs of Witwatersrand mines in December, 1914, in December, 1919, just before the big increase in wages was granted by the Chamber and in the month of February, 1921. Last month's operations and expenses were wholly abnormal, but they show how the unreasoned actions of labour can well nigh wreck a once prosperous industry.

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How Expenses Have Risen.

Here are the figures

	Costs per ton milled					
	Dec., 1914		Dec., 1919		Feb., 1921.	
	s.	d.	s.	d.	s.	d.
Central Mining Group:						
City Deep	21	4	27	10	40	8
Cons. Main Reef	21	7	31	5	44	3
Crown Mines	16	4	25	1	30	6
Durban Roodepoort Dp.	22	4	36	4	34	0
East Rand Proprietary	19	8	26	9	28	3
Ferreira Deep	21	10	27	4	31	7
Geldenhuis Deep	21	8	27	4	31	0
Knight Central	18	8	31	7	28	6
Modder B	15	6	25	7	27	5
Modder East	—		—		32	1
New Modder	16	7	22	0	25	1
Nourse Mines	22	3	29	2	34	5
Robinson	14	5	21	3	24	7
Rose Deep	16	10	21	9	22	2
Village Main Reef	19	4	22	9	*—	
Wolhuter	17	2	25	9	27	4
Village Deep	17	4	30	9	28	0
Johannesburg Con. Invest.:						
Con. Langlaagte	14	6	24	4	44	6
Government Areas	19	11	23	3	22	9
Langlaagte Estate	18	1	23	7	31	0
New Primrose	12	8	20	10	20	6
New Unified	12	3	19	3	21	10
Randfontein Central	16	4	24	11	31	4
Van Ryn Deep	16	1	22	5	25	10
Witwatersrand	14	3	23	3	27	10
Con. Gold Fields of S.A.:						
			Nov., 1919.			
			s.	d.		
Jupiter	—		23	11	*—	
Knights Deep	12	3	16	3	*—	
Robinson Deep	17	8	25	8	31	3
Simmer and Jack	12	11	21	3	24	1
Simmer Deep	15	5	22	0	*—	
Sub Nigel	35	0	42	0	43	9
General Mining and Finance:						
Aurora West	18	0	25	10	34	6
Meyer and Charlton	17	5	24	5	34	4
New Goch	13	4	20	5	27	2
Roodepoort U.M.R.	16	7	23	4	22	6
Van Ryn	14	1	18	1	27	7
West Rand Cons.	19	1	24	9	27	5
Consolidated Mines Sel.:						
			Dec., 1919.			
			s.	d.		
Brakpan Mines	18	0	30	10	34	8
Springs Mines	—		28	7	36	9
Union Corporation:						
Geduld Proprietary	24	2	22	9	24	8
Modder Deep	—		21	1	23	3
Princess	24	4	33	5	*—	

* Closed down.

In considering the above figures it should be remembered that no close comparisons are possible. Different reef conditions, different percentages of sorting and different milling capacities at different periods make hard and fast deductions unreliable, if not dangerous. But one or two rough facts emerge in their crude indisputability from the above comparative table. In the first place it is evident that working costs have risen to such a degree that were it not for the gold premium many more mines would have to relapse into idleness. How can matters be improved?

The Return of Reason.

Let us first see what has been accomplished towards securing more stability in the industry during the current year.

In the past few weeks the Chamber of Mines has given evidence of a desire to return to circumstances of industrial sanity. And what is still more satisfactory, the Chamber has shown a determination to secure conditions which will render it increasingly difficult for a small band of brigand agitators to level a pistol at the Reef and hold up the industry to ransom.

The Chamber has refused to continue to collect doles for the trades union movement, it has said "No" to the demands of the engineers, it has refused to be coerced into dismissing a shift boss who was put into a section of the Consolidated Langlaagte to speed-up efficiency.

The Chamber has stood firm although assailed by sporadic strikes and threats from the whole Reef. The men have had to return to work on the Chamber's own terms—a wonderful transformation of the week-kneed conditions that obtained a little while ago. The agitators appear at the moment to have their tails down and the workers' organisations are squabbling amongst themselves as to whether Union or Bond shall rule at the shaft heads and in the change houses.

The Cost of a Bloodless Battle.

The industrial battle has been fought and won and the tale of the strife is told in the greatly reduced profits of the richer mines, the increased losses of the poorer properties and the tremendous cost bills incurred last month by almost every mine from Randfontein to the Nigel. And this quite apart from the huge losses sustained by the workers.

The Village Deep's Achievement.

There is in the history of this bloodless battle for industrial supremacy on the Witwatersrand one outstanding fact which may help to point the way to salvation. Last month the Village Deep, like numerous other mines, was in the throes of the ill-conceived strike for eight days. But the mill was not hung up. The management did not engage new officials or increase its staff of mine captains and shift bosses. By careful organisation of the white staff and of boss boys and leading hands the company kept its skips going and its stamps dropping and it earned nearly double the profit secured in the previous month. The figures are illuminating and are given hereunder:—

	February.	January.
Milled	43,300 tons	47,700 tons
Recovery	13,475 ozs.	14,567 ozs.
Value	£69,734	£76,477
Profit	£8,994	£4,644
Costs per ton ...	28s. 0·7d.	30s. 1d.

Questions and Deductions.

A consideration of these figures tempts one to ask some pertinent questions and to make some valuable deductions. We may ask if such results were achieved at the Village Deep, which is the deepest property on the Rand and is by no means the easiest of mines to draw tonnage from, whether similar results could not be obtained on other properties if no white labour presented itself at the shaft head for rather more than a quarter of the monthly period? And we might also inquire whether in the event of the miners staying away for longer than eight days a still better increase in profit would have been made? If the Village Deep's February figures are to be taken as indicative of what can be done by mine captains and shift bosses, aided by boss boys and leading hands with the ordinary coloured labour complement, but without white miners—that is, provided "there is no catch in this"—it seems clearly evident that a goodly proportion of the so-called miners on the Rand are a negative quantity and that the mines could very well get along without them.

The Rand Mineworker.

Neither this journal nor anybody else wishes to see white labour overthrown and vanquished by a horde of coloured conscripts. But the truth is that the European employee

Rand Miners and their Boss Boys. Boss Boys played a very important part in keeping the Village Deep going during the recent strike.

will have to dissipate less of his time and threats and idleness and will have to give tangible evidence of a spirit of discipline and usefulness if he wishes to hold his place in the local world of industry.

And with commodities falling in price all the world over and real workers in countries where there is no boss boy to enjoin or umfaan to clout agreeing to a cut in prices in order to keep the mills or factories going, it is certain that in the near future the Reef will have to recognise that inordinately high wages will mean prosperity for a few and that reasonable pay will mean employment for the many. In no other mining country of the world are there so many inexperienced miners as are employed on the Witwatersrand; miners who refuse to believe that mines are but ephemeral things at the caprice of a thousand and one unstable factors and subject to closure through economic disabilities or exhaustion of ore content. In other countries, when metal mining depression sets in, miners emigrate to fields more favoured.

Hanging on to the Industry's Apron Strings.

But the great bulk of the Rand's employees hang on to the apron strings of the industry and seemingly expect, come good, come bad, that they are to be maintained in high wage jobs for all time. Whether mines run at a profit or a loss is not their concern; they are there as the fixtures of gold mining. No one who has knowledge of the Reef can deny that there are hundreds of men employed to-day at high rates of pay who are not needed. They are merely filling in time, and the employers, in order to avert commotions and unrest and in order to minimise unemployment, maintain them in their work. No one desires to see the already distressingly large numbers of out-of-works increased. But there are limits to the endurance of the industry, limits to its capacity to pay out amazing sums of money and to receive little in return. This great surplus of inefficients must learn to perform useful labour or else see much of the industry go to the wall. And the captains of our labour army must arouse themselves and make the reduction of working costs an actual labour and not a battle cry.

Much Talk and Little Action.

For months past the Rand has, in the face of rising costs, been battling for its very existence. The gold premium has temporarily saved the situation. But the gold premium is, after all, only a passing phase of world finance and weld politik. It is a mere industrial trap which has been set to catch a financial dream and as a solution of our low-grade mines problem, and indeed the problems of the whole industry, it can never be regarded as lasting or satisfactory. Real and permanent relief can only come from other causes—from improved labouring efficiency, the elimination of waste, new inventions, improved organisation, and more intelligent and enterprising administration. The pressing problem of our mines is the reduction of working costs, and in the face of this dire need the intellect of the Rand has sunk into a state of coma. Few new inventions of importance are coming along. So long as we have high officials who bury their heads in the sands of conservative ignorance, and so long as we shriek about high working costs and make no real effort to reduce them the industry will continue to work at a huge disadvantage.

The Chimera of the Premium.

This, in our estimate, is the greatest point in Mr. Weston's letter. Reduction of working costs is the only thing that will raise the gold mines from the slough of despond into which they have fallen. The gold premium is a vital consideration, but the stability of our mines depends upon the cost of producing a sovereign's worth of metal, and if the miners cannot market the produce at less than a guinea they will, sooner or later, have to put up their shutters like any other commercial business which has an expenditure in excess of its income. Mr. Weston is quite right when he urges that costs must be reduced. The Reef requires something more stable to exist on than the incidence of the Yankee harvest. And capital, before it embarks on any big schemes of development on the Far East Rand, requires something more attractive than the depreciated value of the British pound, judged in terms of American dollars, which seems for the present to determine the gold premium. Better efficiency, more exacting supervision, the employment of more labour-saving appliances and less extravagant and more enterprising administration are needed, and urgently need, in order that working expenses may be reduced and that the Rand may once again be a field of industrial sanity.

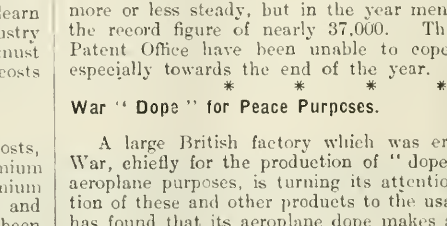
Boom in British Invention.

During the year 1920 there was a remarkable outburst of activity among British inventors. In the years previous to the War, the number of applications for patents remained more or less steady, but in the year mentioned it touched the record figure of nearly 37,000. The officials at the Patent Office have been unable to cope with the rush, especially towards the end of the year.

* * * *

War "Dope" for Peace Purposes.

A large British factory which was erected during the War, chiefly for the production of "dope" or varnish for aeroplane purposes, is turning its attention to the application of these and other products to the usages of peace. It has found that its aeroplane dope makes an excellent insulating varnish for electrical machinery. Further, paper strips drawn through the solution becomes impregnated with it, and are then suitable for winding on copper wires to make "paper-insulated" cables for telephone and electric power purposes. Artificial silk is also produced; and still another possible line of development is in the moulding of electrical connections in celluloid, which has a very high electrical resistance, and is non-inflammable, even when exposed to the heat of a fierce flame. All these products are "synthetic;" that is to say, they are built up by chemical processes from simple constituents.



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Royal Dutch and African Oil Corporation.

PRINCIPAL DETAILS OF NEGOITIATIONS CONCLUDED—MR. VAN TIJN ENGAGES A MANAGER—A TWELVE MONTHS OPTION ARRANGED.

SOME FACTS ABOUT THE ROYAL DUTCH SHELL GROUP AND SIR H. W. A. DETERDING—THE NAPOLEON OF THE OIL WORLD ON THE THRONE OF ROCKEFELLER—COMMENCEMENT OF THE OIL WORLD WAR—THE ROYAL DUTCH DRAWS FIRST BLOOD IN SOUTH AFRICA.

We are able this week to make the important announcement that the principal details of a scheme whereby the Royal Dutch-Shell group of companies acquires an option over the oil shale properties of the African Oil Corporation in the Wakkerstroom area have been completed. An account of this great enterprise, which now rivals the Standard Oil, and of the very remarkable man who controls the Anglo-Dutch combine, is given hereunder.

We learn that the major details of the negotiations which have been in progress between the Royal Dutch Shell group of companies and the African Oil Corporation for some time past have now been concluded, and that the big Anglo-Dutch Oil Company has secured a twelve months option over the Corporation's properties, with the right to purchase and float upon certain terms and conditions. It is reported that one of the clauses of the agreement is that in the event of the option being exercised the Royal Dutch group will provide the sum of half-a-million sterling for subsequent development and equipment of the property.

Immediate Development Probable.

Mr. Van Tijn, the Royal Dutch-Shell group's engineer, who has inspected the properties, and who is arranging for the installation of a complete testing laboratory, has already engaged a manager, and it is probable that an active policy of development will be put into effect in the very near future.

Advent of the Oil Colossus.

And thus it appears that this locally-formed enterprise, which has gone through numerous vicissitudes, and which has been nibbled at by such important concerns as Brunner, Mond & Co., the Central Mining and Investment Corporation, and the Johannesburg Consolidated Investment Company, has become identified with a group of world-wide importance and vast financial resources. The Royal Dutch-Shell group is only rivalled in its position in the oil world by the Standard Oil Trust, and since this great group is now not only taking an interest in the Wakkerstroom shale areas, but has also been prospecting the Sakalava field in Madagascar, some account of the Royal Dutch operations and of the very remarkable man who directs its operations will afford a timely and interesting article.

The head of the group is Sir H. W. A. Deterding, who was recently knighted for services rendered to the British Government during the Great War.

The Domination of Deterding.

The new knight probably occupies the most important position in the oil industry in the whole world. From the commencement of hostilities he placed his services entirely at the disposal of the British Government, and it was largely due to his genius that an adequate supply of oil was forthcoming for the use of the Allies.

Deterding and his associates constitute the big thorn in the side of the American producers, who are scouring the whole world for new oil areas, and who have been urging Congress to dispute the mandates over conquered territory, and particularly over Mesopotamia, with its large potential oilfields.

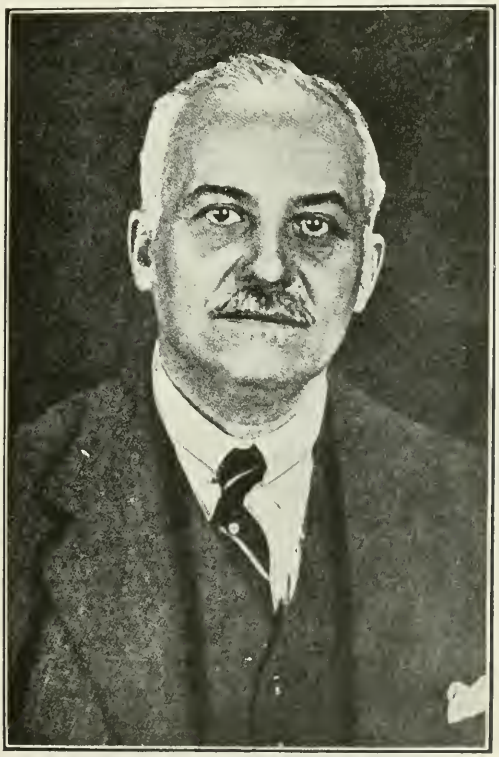
But Sir H. W. A. Deterding is a very wideawake man, and in the great oil war which is now being secretly waged throughout the world he will have to be reckoned with. The oil war has already begun: but it is for production, not for prices, and any trouble that exists between the big groups exists owing to their anxiety to secure—or to prevent their competitors from securing—future areas of production. It is to the credit of the Royal Dutch group, Deterding and his local agent, Van Tijn, that the Anglo-Dutch Company has scored the first deal in Southern Africa, and very big developments may eventuate from the entry into our industrial midst of "the Napoleon of the oil world."

For that is what John K. Barnes, a well-known American authority, calls Deterding in an enthralling article in the current number of "The World's Work."

Napoleon and Alexander.

He says of him:

The outstanding figure in oil to-day is no longer Rockefeller; it is Deterding—H. W. A. Deterding. This stockily-built Dutchman, of pleasing personality, swarthy complexion and liquid brown eyes, educated in Holland and



From the "World's Work."

SIR H. W. A. DETERDING,

Head of the great Anglo-Dutch oil company known as the Royal Dutch Shell Group, Deterding is probably the most important single figure in the great oil drama that stretches around the world, and it is a matter of considerable moment to this country that the Royal Dutch Group is now taking an interest in the Wakkerstroom shale properties of the African Oil Corporation, whilst it has for some time past been prospecting the Sakalava field in Madagascar.

trained in business in the East, is the greatest single power in oil to-day. He is the Napoleon of the oil world. Rockefeller was the Alexander.

For twenty years Deterding has ruled as a dictator over the "Royal Dutch Company for the Working of Petroleum Wells in Netherlands-India"; and under his able management that company has risen from a small producing concern in the Dutch East Indies, as its name signifies, to a practical monopoly over the production of oil in the Indies, to an important position in the Russian, Rumanian, Egyptian, Mexican and Venezuelan fields, and to be a large producer in the United States itself.

With this great growth in production has gone a worldwide expansion of transportation and marketing facilities that has made the Royal Dutch the chief competitor of the Standard Oil in many of the foreign markets of the world. To-day it is the chief competitor of American oil companies for control of foreign oil supplies, on which depends the command of the world's markets of the future. Rockefeller's empire was dissolved by the Supreme Court of the United States. Deterding has always had the strong backing of the Dutch Government, and now, apparently, the British Government is also behind him.

The Royal Dutch Company, with its long name and a capitalisation equivalent to only £130,000 approximately, was incorporated at the Hague in 1890, long before the Standard Oil Company had introduced American oil to practically all the markets of the world.

The Rise of the Royal Dutch.

The story of the rise of the Royal Dutch to a world-power is the story of Deterding. Seated behind his great semi-circular desk at St. Helen's Court, Great St. Helen's, London, this Napoleon of the oil world has in recent years received daily reports from nearly every quarter of the globe, keeping him informed of the operation of his great combination throughout the world. It is his boast that from the time the Royal Dutch was a small local venture in the Indies until now, when its operations are world-wide, he has kept track of all the details of its growth.

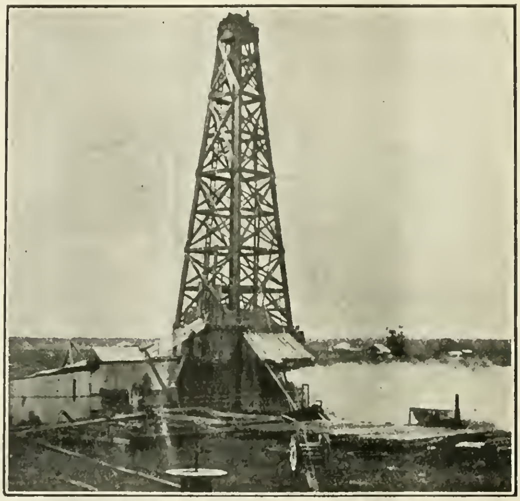
The underlying policy that accounts for this great growth—the Deterding plan of campaign—is not hard to understand. While Standard Oil was adhering to the motto of "American oil to light the World," he was extending his control over oilfields throughout the world, his object being to acquire oil supplies as near as possible to all the markets of the world.

The new policy announced by Mr. Walter C. Teagle, president of the Standard Oil Company of New Jersey, on the fiftieth anniversary of that company last January, of being "interested in every producing area, no matter in what country it is situated, provided interests can be secured on a basis that would seem to hold out the possibilities of success," is the policy that Deterding has been following for fifteen years.

Sea Shells to Oil.

A description of Mr. Deterding's methods and an explanation of his success has been given by an American oil man who has been in competition with his organisation in different parts of the world, and who has been a close student of international developments in oil. "Deterding is a plunger," says this man. "His success is due to the fact that he has been plunging in something that has steadily grown in value. Furthermore, he is plunging with other people's money and not his own. That probably accounts for the fact that he is such a plunger. For example, he paid five times what other people would have paid to get into Egypt, and has lost heavily there. He pays in stock for the properties he acquires, however, which gives him an advantage over the Standard, which has always followed the policy of paying in cash. Credit is due him, nevertheless, for starting on a shoestring and building up the great organisation he has."

It was in 1903 that Deterding made his alliance with Sir Marcus Samuels and the Rothschilds. Sir Marcus had started as a dealer in sea shells near London. His business grew and he cast about for a commodity to exchange for the shells which he brought from the East. He decided upon oil, and became a producer in Borneo.



The Oil Battle of the World has started, and the Royal Dutch Shell Group, rivals of the Standard Oil are identifying themselves with the Wakkerstroom oil shale areas, thus drawing first blood in South Africa. Photo depicts one of the Royal Dutch Company's Wells.

In 1897 The "Shell" Transport and Trading Company, Ltd., was incorporated in England to take over the business of M. Samuels and Co., which had then become an important London oil house, and some other oil houses. This organisation had a large number of tank steamers and several hundred tank stations. It was an effective competitor of Deterding in the East, as he did not have the oil tankers.

So in 1903 he made the alliance with Sir Marcus and the Rothschild group of Paris, who had oil interests in Russia. The Asiatic Petroleum Company was organised to provide for the distribution of the products of the three organisations. Then Deterding directed his attention to securing larger control over production in the Dutch East Indies. He absorbed the companies that he wanted and fought those he did not want. His methods were much the same as those of the Standard Oil in the old days.

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His first great coup in the international field was the amalgamation of the "Shell" Company with the Royal Dutch. This was effected in 1907 Two new companies were formed to take over the combined assets: the Bataafsche Petroleum Company, to do the producing, and the Anglo-Saxon Petroleum Company, to do the transporting and marketing. The Royal Dutch got 60 per cent. of the stock of these companies and the "Shell" 40 per cent.

Thus Deterding came into complete control of this powerful Dutch-English oil combination. From that time on the sphere of his activities in the international field expanded rapidly; he acquired large interests in the oil fields of Sarawak, Rumania, Russia, Egypt, the United States, Venezuela, Trinidad, and Mexico. He amalgamated the Russian interests of the Paris Rothschild group with the combination. He made long term contracts with the Anglo-Persian Oil Company, now controlled by the British Government, giving him most of the products of the great Persian fields until 1922.

The close relationship established between the Royal Dutch and the British Government has been one of the most important developments in the oil world. Whether the Government actually controls the Royal Dutch-Shell combination no one can prove, although some well-informed people believe it to be the case. The articles of association of the Royal Dutch Company would have to be changed to permit of such control, for under them the preference shares cannot pass out of Dutch hands, and they are supposed to be held by interests closely allied with the Royal Family of Holland. If there has been a change in control, therefore, it must have been effected by an agreement between the British and Dutch Governments. Such an agreement might be to the advantage of both Governments. The "Shell" Company, the minority partner in the combination, is, of course, a British company, and ever since the British Government bought control of the Anglo-Persian Oil Company in 1914 Sir Marcus Samuels has been trying to get it to take an interest in the Royal Dutch-Shell.

Deterding's Ambition.

If the State Department in Washington gives sufficient assurance to American companies to secure for them a foothold in Mesopotamia, here may be fought the first battle for control of foreign oil supplies. Such are to be the battles of the future. In them, the aid of a Government having as strong and far-seeing a foreign policy as the British would be invaluable. Is it any wonder that Deterding is closely co-operating with the British Government?

Deterding, like Napoleon, has great personal ambitions. His greatest is to fight the Standard and drive it out of certain markets. Aside from Mr. Teagle, whom he likes, he has no use for the Standard Oil people. In this respect the regard is mutual. Deterding knows what it is to fight the Standard, for he has fought it in the past.

To the warning that he could never in the end beat the Standard with all its money, he replied with emphasis that he could match every dollar the Standard could put up. Did he not have the millions of the Rothschilds at his command?

But just how he was going to fight is not clear. There is no surplus of oil in the world to-day with which to wage an ordinary price war. The conditions in the industry that have attended previous price wars are not present. There is a demand at advancing prices for all the oil that is being produced to-day. And a battle for producing territory cannot be brought on at will.

But when a man of strong ambitions and great ability wishes to satisfy his personal ambition, he can usually find a way to do it. That is what Deterding wished to do recently, and according to some authorities, we just missed the greatest oil war in history. Deterding, for once, however, followed the more conservative counsel in the Royal Dutch-Shell organisation—which must have been in line with his own better judgment—and open warfare was not declared.

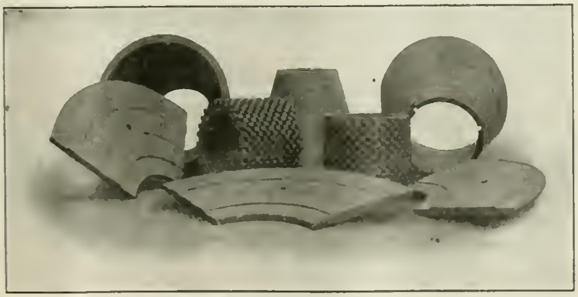
The demand for a six months' period to investigate any property offered it is a fixed policy of the Royal Dutch. At the end of that time it sets the price that it will pay, which the owner can take or leave as he sees fit. Because of this policy, and the fact that even small details of operation have to be referred to the home office, the Royal Dutch is not able to move as quickly as many other oil companies, and there has grown up a well-founded opinion among oil men that many of its operations, at least as far as the United States and Mexico are concerned, are not efficiently managed. But the same criticism can be made of some of the operations of other large companies, including the Standard. Fixed rules frequently do not fit local conditions.

Preparing for Battle.

The Royal Dutch and the "Shell" companies have repeatedly raised additional capital by the sale of new stock to stockholders. "The reason for this," said Sir Marcus Samuels recently, "is that we feel that it is impossible to have too much money in a business such as we are conducting, and which calls for immense expenditure all around if we are to maintain our world position in the petroleum business."

The present cash and liquid resources of the group are given by Sir Marcus as £35,000,000. Some of this money has come from the United States, where the stocks of the two holding companies were introduced in the New York market by Kuhn, Loeb and Co. in 1917.

The Standard Oil of New Jersey recently departed from its former policy of financing its entire growth out of earnings, and has sold nearly £45,000,000 of preferred stock to stockholders within the past year, J. P. Morgan and Co. being the underwriters. It now has larger cash resources than the Royal Dutch-Shell group, and is well prepared for the battle that oil men say is coming, which will be a battle with money, not with oil. When it comes, not only will all the Standard Oil companies be lined up together, but the other large American companies as well will probably be found fighting alongside of the Standard Oil Company of New Jersey. For it will be a fight of nations to secure adequate oil supplies for their future, and the Royal Dutch Company evidently thinks that Southern Africa must not be left out of the reckoning.



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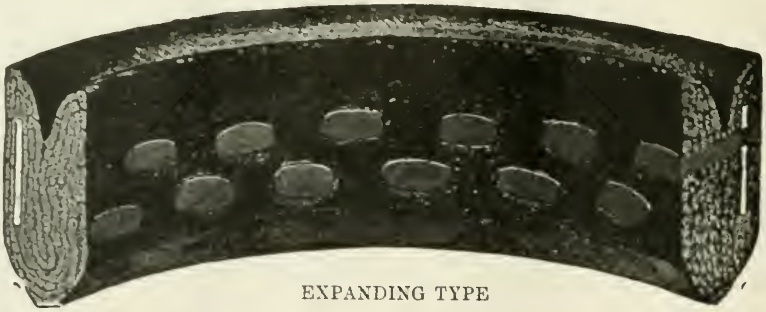

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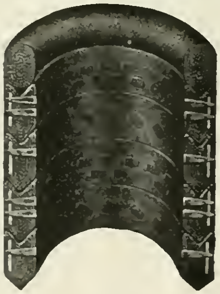

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A Year of Diamond Mining.

UNION STATISTICS FOR 1920—A RECORD PRODUCTION BUT SALES LESS THAN IN 1919—FIGURES FOR THE PROVINCES AND DISTRICTS—MINES AND ALLUVIAL FIELDS—SOME HIGH VALUES PER CARAT.

The diamond industry, so prosperous a year ago, has fallen into the slough of despond, and, in noting the instructive figures given below, it must be borne in mind that they are the scintillating statistics of yesteryear and not the gloomy facts of to-day. One marks these figures with a sense of poignant regret that this glamour is of the past in much the same way as one reads of the decline of Imperial Rome. For the diamond market is reported to have collapsed and what with curtailment of operations at De Beers and the Premier, cessation of operations at the New Eland, Frank Smith, Roberts Victor and Postmas Prospect, and the debacle on the diamond diggings, more than ten thousand people directly dependent on the diamond market find that their livelihood has gone.

The following figures deal only with the Union, they do not disclose particulars regarding operations in the South-West African Protectorate, where the big Consolidated Diamond Mines of South-West Africa with Tiffanys as a sales agent and adviser have sought perhaps to dispute the predominance of the De Beers-Premier combine with the Diamond Syndicate at its back. We do not say that a diamond war is being waged, but we believe that the present slump is the direct result of world-wide trade and financial conditions and of a challenge to the Diamond Syndicate in the form of increased production by the interests which can obtain diamonds without digging deep into the bowels of plutonic pipes.

Although the estimated value of diamonds produced in the Union of South Africa during 1920 was a record, the actual value of sales last year was roughly £3,200,000 below the 1919 figures.

This and many other important facts are disclosed in a valuable statement accompanying the last monthly report issued by the Mines Department of the Government, which gives full details of diamond mining and output in the Union during last year.

The tables deal with production statistics in great detail, and enable one to gauge the measure of rise and fall in this fickle industry which was a year ago so prosperous and has now fallen into a parlous plight of poverty.

Rise and Fall of the Gem Market.

In the first place it will be interesting to note the incidence of the War and of the post-War period of extravagance born of the War's aftermath upon diamond production in South Africa.

We will then first show the production and sales of the South African gems in the year preceding that of the beginning of the great conflict and thereafter trace the decline of the industry and its gradual advance in prosperity until 1919 when the peak of high sales was reached and 1920 when estimated value of output amounted to the record total of fourteen and three-quarter millions. Here then are the figures:—

	Production from Mines.							Total Production'		Total Sales.		
	Mines Producing.	Carats.	Estimated Value.	Value per Carat.	Carats.	Alluvial Value.	Value per carat.	Carats.	Estimated Value.	Carats.	Value.	Value realised per carat.
UNION OF SOUTH AFRICA, Year 1920	19	2,312,436·55	12,289,602	106 3	221,460·17	2.441,440	220/6	2,545,017·47	14,762,899	1,765,554·57	£10,163,941	115 2
YEAR, 1919	16	2,366,744·54	8,960,614	75/9	209,589·77	2,740,518	261/6	2,588,017·06	11,734,495	2,648,931·01	13,379,662	101/0
YEAR 1918	11	2,385,361·73	6,137,283	51/5	143,438·43	964,574	134/6	2,537,360·16	7,114,867	2,641,932·61	7,232,744	54/9
YEAR 1917	12	2,710,041·38	6,659,721	49/2	182,992·38	1,041,776	113/10	2,902,416·51	7,713,810	2,416,209·61	6,170,906	51/1
YEAR 1916	7	2,170,348·04	4,769,479	43/11	167,620·17	948,571	113/2	2,346,330·21	5,728,391	2,291,956·88	5,227,777	45/7
YEAR 1915	1	2,131·26	3,887	36/6	97,678·47	392,196	80/4	103,385·73	399,810	551,951·54	1,459,597	52/11
YEAR 1914	—	2,653,089·70	4,906,342	37/0	143,924·62	576,729	80/2	2,801,016·57	5,487,194	3,363,568·41	6,758,544	40/2
YEAR 1913	12	4,944,946·30	10,254,203	41/6	206,049·29	1,120,227	108/9	5,163,546·68	11,389,807	5,537,820·43	12,088,983	43/8

Provincial and District Returns.

Details of output according to districts call for attention attention Figures in respect of areas are as under.

DISTRICT AND PROVINCE.	MINES				ALLUVIAL.			TOTAL PRODUCTION.		TOTAL SALES.		
		Production			Production.							
	Producing during Dec., 1920.	Carats	Estimated Value.	Estimated Value per Carat	Carats.	Value.	Value per Carat	Carats.	Estimated Value.	Carats.	Value.	Value realised per Carat.
			£	s. d.		£	s. d.		£		£	s. d.
TRANSVAAL	2	782,557·30	2,390,868	61 1	122,739·75	1,209,442	197 1	905,297·05	3,600,310	696,819·90	3,124,380	89 8
KIMBERLEY	3	1,258,129·00	8,267,240	—	8,568·25	119,335	278 7	1,277,818·00	8,418,432	771,935·50	1,680,787	—
BARKLY WEST	1	1,599·00	13,704		57,456·75	698,529	243 2	59,055·75	712,233	57,456·75	698,529	—
TAUNGS	—	—	—	—	18,926·00	232,773	246 0	18,926·00	232,773	18,926·00	232,773	
HERBERT	—	—	—	—	7,918·00	93,616	236 6	7,918·00	93,616	7,918.00	93,616	—
KURUMAN	2	328·50	2,279	—		—	—	328·50	2,279	260·00	1,181	—
HAY	2	644·75	4,110	—	0·25	2	—	645·00	4,142	195·25	674	—
PRIESKA	—	—	—	—	14·25	30	—	14·25	30	14·25	30	—
VRYBURG		—	—	—	0·75	7	—	0·75	7	0·75	7	—
CAPE	8	1,260,701·25	8,287,363	131 6	92,884·25	1,141,292	246 5	1,361,706.25	9,163,512	856,706·50	5,707,597	133 3
FAURESMITH	2	198,690·25	1,425,389		0·91	3	—	198,691·16	1,425,392	147,842·66	1,088,074	—
BOSHOF	3	47,064·00	103,839		925·75	12,863	277 11	47,989·75	116,702	40,893·00	112,130	—
KROONSTAD	1	14,175·00	37,675	—	—		—	14,175·00	37,675	9,465·25	31,359	—
WINBURG	3	9,248·75	44,468	—	41·75	162	—	9,290·50	44,630	9,119,50	45,002	—
ROUXVILLE	—	—	—	—	4,855·76	74,525	306 11	4,855·76	74,525	4,699·01	55,258	—
VREDEFORT	—	—	—	—	8·00	137	—	8.00	137	7·00	129	—
HOOPSTAD	—	—	—	—	1·75	15	—	1·75	15	1·75	15	—
FICKSBURG	—	—	—	—	2·25	1	—	2·25	1	—	—	—
ORANGE FREE STATE	9	269,178·00	1,611,371	119 9	5,836·17	87,706	300 7	275,014·17	1,699,077	212,028·17	1,331,964	125 8

As a matter of curiosity it may be observed that during the year 61 carats worth £293 were recovered from Witwatersrand gold mines, notably the Modder B and Van Ryn Deep. Practically the whole of the mine production in the Transvaal was derived from the Premier, and the Transvaal alluvial output was apportioned as to:—

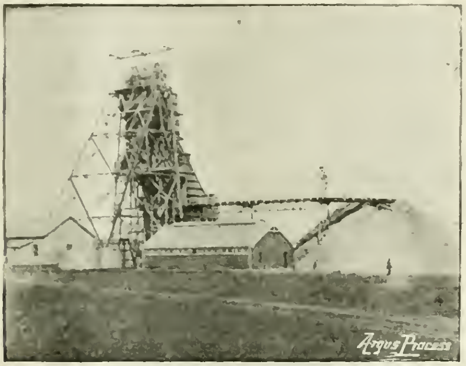
Pretoria District	£109,696
Klerksdorp	1,099,746

THE FRANK SMITH DIAMOND MINE: ONE OF THE RECENT DISAPPOINTMENTS OF INDUSTRY AND SPECULATION IN SOUTH AFRICA.

February Operations on the Rand.

ALL-ROUND REDUCTION IN PROFITS—GROUP FIGURES FOR THE PAST THREE MONTHS—WHY WORKING EXPENSES MUST COME DOWN.

February invariably sees a set-back in Rand production and a decline in profit earning on account of the shorter running time, but this year abnormal circumstances have helped to make the February results exceedingly bad. Strikes and labour unrest converted several properties which normally are profit earners into mines working below the pay limit. The price of gold was taken as £5 3s. 6d. per oz., which compares with £5 5s. in January and £5 19s. in December when the output was over-valued. February costs were abnormally high. At four important properties it cost over two pounds a ton to mine and treat ore, and the average for the whole Rand was little short of thirty shillings a ton. Under these circumstances it is hardly surprising to find the aggregate profits for February were much below the January total and less than half those recorded in respect of December. Group profits for the past three months are as under:



A Scene on the Witwatersrand Gold Fields, where in February it cost four mines over £2 per ton to mine, crush, treat and pay overhead charges on a ton of ore.

Central Mining/Rand Mines Group.

	December. £	January. £	February. £
City Deep	70,139	64,468	8,088
Cons. Main Reef	16,087	7,534	8,543*
Crown Mines	99,526	46,605	30,154
Durban Deep	132	2,881	1,766*
East Rand Prop.	12,008	24,256*	7,652*
Ferreira Deep	16,294	10,903	3,037
Geldenhuis Deep	8,264	1,268*	6,074*
Knight Central	6,007	367*	2,113*
Modder B.	83,573	67,030	62,347
Modder East	25,849	14,348	10,988
New Modder	151,097	122,265	100,639
Nourse Mines	8,138	5,752	987*
Robinson	7,999	3,580	2,934*
Rose Deep	16,202	6,011	2,871
Wolhuter	12,177	2,682	808*
Village Deep	10,535	4,644	8,994
Group total	514,027	332,812	196,241

	December. £	January. £	February. £
J.C.I. ("Barnato") Group.			
Cons. Langlaagte	20,120	14,522	3,590*
Government Areas ...	180,692	137,390	105,074
Langlaagte Estate ...	13,934	11,309	3,530
New Primrose	4,559	2,002	1,704
New Unified	3,098	2,042	778
Randfontein Central ...	27,040	18,696	6,236
Van Ryn Deep	81,523	76,167	68,617
Witwatersrand	14,054	7,510	5,074
Group total	345,020	269,638	187,423
Union Corporation Group.			
Geduld Proprietary ...	36,604	29,497	24,425
Modder Deep	78,661	71,721	66,508
Group total	115,265	101,218	90,983
"C.M.S." Group.			
Brakpan	54,071	45,113	34,412
Springs Mines	39,353	30,045	14,445
Group total	93,424	75,158	48,857
Gold Fields Group.			
Simmer and Jack ...	13,233	3,759	2,341
Robinson Deep	87	4,385	2,522
Sub Nigel	8,169	5,679	5,981
Group total	21,489	13,823	10,817
General Mining Group.			
Aurora West	858	544*	2,101*
Meyer and Charlton ...	28,922	25,002	15,012
New Goch	1,260	822	2,303*
Roodepoort United ...	2,381	1,440*	2,279*
Van Ryn	15,489	10,116	6,098
West Rand Cons. ...	8,027	6,304	4,860
Group total	56,937	40,260	19,286
Wit. Deep	9,188	4,624	6,413

* Loss.

The moral of this lamentable showing is very clear. **The Rand must reduce its working costs or else witness the closing down of a number of mines.**

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of February: Tons crushed, 2,975, yielding 1,057 fine ozs.; estimated value of month's output, £5,560; estimated profit for month, £464.

GOVERNMENT EXAMINATIONS.

Up-to-date Tuition.

MANAGER'S CERTIFICATE (METALLIFEROUS). We secured 15 Passes from 19 Entries in two recent examinations, and in the last (Jan. 1921) examination secured 7 passes from 8 entries. **Another percentage record !**

MANAGER'S CERTIFICATE (COAL).—New Class recently started. Candidates being enrolled.

MINE SURVEYORS' CERTIFICATES.—We have secured 55 Certificates to date, and lead with passes by more than 10 to 1.

OVERSEER'S CERTIFICATE.—We lead with passes, 1918 and 1919. 21 Certificates secured during 1920 Overseers' Class (Coal) recently started.

PRELIMINARY SURVEY.—We have trained the majority of the Assistant Surveyors working in the Mines.

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The Witbank Coal Area.

PLANS FOR INCREASING PRODUCTION—NEW PITS BEING OPENED.

The coal output of the Witbank-Middelburg coal field in January was 460,418 tons, with a value at pit's mouth of £163,418, or 7s. 1d. per ton. All the large producers have been preparing for increasing trade for some time past, and in the following notes we give a brief account of the recent undertakings of the chief companies operating in this area, made with a view to coping with an augmented demand for their product.

A state of affairs symptomatic of the present depressed condition of all markets prevails in the Witbank district at the present moment. Coal mines, like gold-bearing areas and human beings, have a limit to their existence, and in view of the exhaustion of a large portion of their old areas and the exceedingly promising outlook for building up a large export and bunker trade which prevailed a few months ago, nearly all the coal companies operating in this area made preparations for a greatly increased demand and opened up new areas, increased or reorganised their plants, and sank new shafts.

Competition in the Southern Seas.

But with the completion, or partial completion, of these plans for expansion came the news that owing to low freight charges and increased outputs, the pits of the United Kingdom were again able to compete with South African collieries in the Southern Hemisphere. Demands for coal at Delagoa Bay have in consequence recently been curtailed. Whether this is a passing phase or not remains to be seen; in well-informed quarters the view is held that the Union's collieries on account of their exceedingly low initial cost of production will be able to retain a goodly proportion of the world's coal trade south of the line.

A Scene on the Witbank Coalfield.

A Glance Round the District.

Be that as it may, the following notes on the position in the Witbank district, forwarded to us by a correspondent who is in most intimate touch with activities in the Witbank area are of considerable interest.

The Witbank Company has thoroughly bored, and will shortly open up a new mine on "Wolvekranz," about 15 miles south of Witbank.

At the Landau Colliery boring is proceeding on a portion of the form "Steenkohlspruit," between the Steenkohlspruit and Oliphants River.

The Transvaal & Delagoa Bay people are opening up a new area, to be called Douglas Colliery, immediately east of their present collieries.

The Coronation Company is opening up a new colliery at Arnot, between Middelburg and Belfast.

The Coronation Colliery will shortly commence to rob pillars at their old mine.

The Middelburg Steam Coal and Coke Company has sunk a new main incline shaft about half a mile to the north of the old pit, the capacity of which will be 50,000 tons (over 12 feet clean coal). This company has recently absorbed the Station Colliery, one mile to the east.

Oogies Extension.—The Consolidated Gold Fields of South Africa is opening up this colliery on the north side of Oogies Station. A railway siding to Oogies Station has been constructed.

At the Anglo-French (now Transvaal Navigation), the old plant near Blackhill Station was burnt out early in 1920. The new colliery was sunk down to coal, and is now developing. This is situated about half-way between Blackhill Station on the Witbank-Apex line and Brugspruit Station on the Witbank-Pretoria line. A third colliery is now being sunk close to the railway line between Witbank and Blackhill railway stations.

South-West Diamonds.

The output for the month of February is 238 carats. The realisation of 917¼ carats of diamonds produced during July, August and September, 1920, less 4 carats for loss in acidising, was £4,982 10s., being at the rate of 109/1½ per carat.

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The Mining Exhibition.

A SUCCESSFUL ENTERPRISE—OPENED BY SIR LIONEL PHILLIPS.

The new premises of the Technical and Scientific Societies of South Africa in the Scientific and Technical Club, 100 Fox Street, were filled with an interested number of visitors on Wednesday morning, when Mr. J. Chilton, President of the Chemical, Metallurgical and Mining Society of South Africa, introduced Sir Lionel Phillips, who opened the exhibition.

This is the fifth annual Chemical, Metallurgical and Mining Exhibition, promoted by the Chemical, Metallurgical and Mining Society of South Africa (Incorporated), and in declaring it open Sir Lionel expressed his keen interest in the affairs of the Society, and paid a valuable tribute to the talent of the Rand's scientific appeals to the interest of all engaged in the mining industry, and technical associations. The exhibition, which mainly has been most successful. Mechanical exhibits, especially, compared with those of previous years, show an increase in number, as well as appreciable improvement so far as utility is concerned. A list of the principal engineering exhibits appears in the Engineering Section of this journal.

The exhibition, which will be continued until the 19th inst., has been largely patronised by the various mining companies, and engineering and other firms, whose exhibits are of a highly interesting character. These include apparatus and mechanical goods used in the industry, and at each of the stands on which they are on view representatives obligingly give full information concerning them.

The Safety Museum.

The safety museum is an exceptionally interesting feature, and the profuse display of literature which abounds there evidences the importance which is attached to the principle of "Safety First" being inculcated. Included in the exhibits in this section is a simple device known as the nasal filter which is claimed to be a lung shield against miners' phthisis in that it filters the air of germs and dust.

Amongst the various safety exhibits must, too, be mentioned Alison & McLuskie's safety first fuse igniter (registered patent). The following are some of the advantages claimed for this safety fuse igniter:—

A.—Under the present system of blasting, when the miner has charged up the holes which he wants to blast, he has to light all his fuses one after another; the result is, after he has lighted a few of the fuses, the smoke given off becomes very dense, and gradually gets worse, so that, if he has many to light, by the time he gets to the last few fuses the smoke is so thick, he has practically to grope for the other fuses still unlighted. All this time the miner is inhaling the smoke given off from the burning fuses. This smoke is very painful to the eyes, and in many instances the miner leaves a few fuses still unlighted. By using the "registered patent safety fuse igniter," the miner has no smoke to contend with, which is very beneficial to him from a health point of view.

B.—In some instances a miner when blasting has to contend with a defective or running fuse. This incurs a certain amount of risk and danger to himself. For instance, a running fuse, after lighting, may blast the hole before he has finished lighting the other fuses, or before the miner is out of danger. By using the "registered patent combination fuse igniter," there is no danger to the miner, as the fuse igniter has to burn to the end before the fuses are lighted, thus giving him time to get out of danger. In blasting during development operations at present, in many cases the fuses comprising the cut are not all lighted at the same time. The result is that the holes comprising the cut do not all go off together, and when the miner returns again to his working place, he finds that he has had a very poor blast, and in many cases the round has been completely hung up. So again it will be seen that the fuse igniter is not only a Safety First Device, but it also gives greater efficiency in blasting.

C.—In shaft sinking a great many accidents have happened in the past. It may be that something goes wrong with the engine; a false signal may have been given, or as has occurred on rare occasions, the engine driver may forget himself at the moment, and pull away before he has been signalled to do so, with the result that it is fatal to the miner. The only possible chance that the miner may have, if he has lit up his fuses, is to cut them below the part which is burning. This is a very difficult operation, as it requires a lot of time, and the miner also requires to have a very strong nerve, and at the same time he has the smoke from the burning fuses to contend with. This is very painful to the eyes, and also gives a choking sensation, so that he is liable to miss some of the fuses, and the result is generally fatal. By using the "registered safety fuse igniter," which is simplicity itself, an accident through blasting can be avoided, as all the miner has to do is to detach the fuse igniter from the fuse. This can be done in a few seconds, and is so arranged that any person can attach the fuses without the slightest difficulty. By the use of the fuse igniter, the miner can use 25 to 30 per cent. less fuse than is used at the present time, owing to the low burning speed of the fuse igniter. Therefore, the cost is overcome by the amount of fuse that is saved when blasting, and as well as saving 25 to 30 per cent. of fuse, he saves 25 to 30 per cent. of the fumes given off by the burning fuse. This is going to benefit the ventilation of the mine to that extent. This device should effect a great saving in coal mining, where blasting is being carried out during the working hours, as the miner will have to contend with 25 to 30 per cent. less smoke, and will be able to get better results from the natives. It will be seen by a careful study of the benefits of the "registered patent combination safety fuse igniter," that blasting accidents are almost a thing of the past, and that another step towards the prevention of phthisis has been obtained, as the miner has no noxious fumes to contend with while lighting up his charges, since the fumes from the fuse igniter being oxygen, are non-injurious to the health, but are highly beneficial.

Where this year's interesting Mining Exhibition is being held: The Club House of the amalgamated Technical and Scientific Societies in Fox Street, Johannesburg.

Other interesting features on exhibition are two cases of mineral specimens from J. H. Houghton's collection; also two paintings, lent by the Rand Pioneers, one depicting the first house built by the digger community in Johannesburg in 1887, and which was destroyed by the heavy rains in December, 1891. The house was situated on City and Suburban township. The other picture represents the first house built in Johannesburg, a room in which is stated to have been the headquarters of the old Standard Bank. The Woodworth-Tregaskis Magnetic Separator, already described in this journal, also calls for mention.

Further details of the various interesting exhibits will be given in our next issue.

The South African Currency Problem.

SOME FURTHER CRITICISMS—THE RESTORATION OF GOLD CURRENCY—" CONFUSION OF THE COMMITTEE BY A CHIMERA OF A BALANCE SHEET."

By Professor Edwin Cannan.

We give hereunder the second instalment of this important article by Professor Edwin Cannan, Professor of Economics in the London University, on the South African Currency Problem. Professor Cannan's illuminating treatise appeared in the " Economic Magazine," and it has been condensed, but the abstract is too lengthy to be published in one issue of the " Mining Journal," and we are accordingly reproducing it in two instalments. In the first portion of the article Professor Cannan dealt with this complex and controversial subject up to the time of the sitting of the " Inexpert Committee " of the South African Government, the members of which, he declares, seem to have been " clay in the hands of Mr. (now Sir) Henry Strakosch." The second portion of the article deals with important truisms and principles and with general observations on the subject, including a statement that Sir Henry " thoroughly confused the majority of the Committee with a chimera of a balance sheet which does not balance."

Mr. Strakosch admitted that South African currency was depreciated against gold, that to maintain currency at a parity with gold it must be convertible into gold, and that to maintain foreign exchanges at par coin and bullion must be freely exportable and importable, but held that South Africa could not " afford to re-establish and maintain its currency on a true gold basis " at the present moment. As usual, when currencies once become depreciated, it is a case of " jam yesterday and jam to-morrow, but never jam to-day." The argument may be put under two heads: (1) It is undesirable to raise the South African pound to the value of 113 grains of gold; and (2) if it were so raised, it would be impossible to keep it there.

(1) The first head does not call for much comment. Mr. Strakosch adduced the objections which are commonly made to raising the value of the unit of account without adding anything fresh, and without any attempt to balance the advantages and disadvantages of a fairly rapid return to the gold standard against the advantages and disadvantges of his own plan of " wait and see." He laid much stress on the theory that if South Africa were on a gold basis, while the United Kingdom was on a lower Bradbury basis, the United Kingdom investor would be deterred from investing in South Africa, and the South African investor would be attracted to invest in the United Kingdom by the belief which each would have that the Bradbury is bound to rise to 113 grains of gold in the near future. He overlooked the fact that this belief is waning, and is likely to be further shaken by the coming collapse of Continental paper currencies, so that gold-standard countries are likely to come into greater favour with the investor, and he forgot that the coming of an alteration in the purchasing power of money affects what will be offered to the investor as well as what he will accept. If South African pounds were worth 113 grains, and going to stay at that, while Bradburies were 82, and going to rise soon, it is true that a lender would prefer a long-term or a perpetual 6 per cent. in Bradburies to the same rate in South African pounds; but it is equally clear that the borrower could well afford to offer a much higher rate of interest if the loan were contracted in South African pounds, since if he contracted in Bradburies he would soon be paying the same annual value as if he had received South African pounds, whereas, in fact, he only received on loan the same number of United Kingdom pounds, each worth only 82-113ths as much as a South African pound.

(2) On the second head, the impossibility of keeping the South African pound at 113 grains, supposing it to have once got there, Mr. Strakosch misled the Committee by completely ignoring the orthodox doctrine of the exchanges as taught by the economists. That doctrine has been so snowed under by neo-mercantilism in these latter days that even in the pages of an economic journal it may be useful to recapitulate it.

It is founded on (a) the truism that a currency or unit of account is valued for what it is worth—that is, for the commodities and services (let us say " goods " for short) which it will buy, and (b) on the well-established economic principle, to which currency is no exception, that variations in the supply of an article affect its value or power of buying, increases tending to reduce, and decreases to raise, its value. For an example of the truism we may say that Englishmen and others value American dollars because, and in so far as, those dollars will buy American goods; Americans and others value English pounds because, and in so far as, those pounds will buy English goods. If dollars rise in purchasing power (in other words, if prices of goods fall in America), while pounds fall in purchasing power (in other words, if prices of goods rise in England), or remain stationary or rise less rapidly than dollars, fewer dollars will be worth as much as a pound—i.e., the exchange value of dollars in pounds will rise, and that of pounds in dollars will fall. For examples of the general principle that increase of supply tends to reduce the value of an article we need not search; everyone has everyday experience of its truth: that currency, whether metallic or paper, is an exception to the rule is believed by none but a few currency cranks who have never been able to produce the smallest logical justification for their view, and have always had to fall back on gross misrepresentation of historical facts.

Truism and Principle.

The truism and the principle together involve the consequence that the exchange between currencies can be kept close to a given rate by due regulation of their supply, whether that regulation is conscious or automatic. The Indian Government, by conscious regulation of the supply of rupees, kept the rupee approximately equal to one-fifteenth of 113 grains of fine gold, and therefore at a stable rate with all the gold-standard countries for nearly twenty years before the war. Conscious regulation is simple enough; automatic regulation is a little more difficult to understand. It takes place where two or more currencies are each in part at least composed of something which can be used at will for purchases in either or any of the countries concerned. Before the War, for example, English pounds and American dollars were both in part gold pieces which could be lawfully transported from the one country to the other, and be converted from one coin into the other at small expense. In practice the situation was very little different from what it would have been if sovereigns had been legal tender in America for 4.8665 dollars, and dollars legal tender in England for 4s. 1.32d. There could be no great variation in the exchange between two or more countries linked together in this way, because if the purchasing power of the unit of currency fell for any reason in one country while the unit of another rose, remained stationary, or did not fall so fast—in other words, if prices of goods rose in one country, while in another they fell, remained stationary, or did not rise so much, it immediately became profitable to send gold from the first country to buy goods from the second. This promptly equalised matters and stopped the tendency of the exchange rate to diverge from the normal: that it must do so becomes obvious when we reflect that, for example, the sending of gold from England to America, and the bringing of goods from America to England, at once made gold scarcer in England and more plentiful in America, while at the same time it made goods scarcer in America and more plentiful in England. To the objection, sometimes urged, that gold was only a small portion of the currencies, the answer is, in the first place, that when a thing is nicely balanced a touch will make it swing; and in the second place, that the existence of a very large paper currency beside the gold had no tendency to counteract the influence of movements of gold, but rather the contrary, inasmuch as the banking organisation of each country secured that when gold left it the paper currency did not increase to take its place, but diminished, and that usually by a greater absolute amount than the gold currency.

A Question of Balance.

In place of this old and well-established theory, Mr. Strakosch put before the Committee a doctrine that the stability of the exchanges before the War was due to the trade or transactions of the principal countries having—apparently quite fortuitously—" perfectly balanced," while since the War it has been " out of balance " temporarily, though it must balance in the long run. No one asked how an account covering exports and imports and all the transactions included by Mr. Strakosch and the Committee in " invisible exports and imports " could possibly fail to balance for even the shortest period of time. When the visible exports, plus the invisible, do not equal the visible imports, plus the invisible, what does the difference consist of? Mr. Strakosch never explains this, but may be suspeted of supposing it to consist of debt not intended to be of long duration; but the contraction of debt has already been set down as one of the items in the invisible imports and exports, and if the whole has not been included the item should be amended. The majority of the Committee, when they talk of " the maintenance of an excess of visible and invisible exports over visible and invisible imports (Report, page 6) are probably making the difference consist of coin imported, thus partially reverting to the mercantilist nomenclature, in which coin was not included in imports and exports. But the mercantilists excluded bullion as well as coin.

" Confusing the Committee with a Chimera."

Having thoroughly confused the majority of the Committee with the chimera of a balance-sheet which does not balance, although the items on each side add up to equal amounts, Mr. Strakosch proceeds to terrify them with two bugbears—the Indian peasant who will insist on buying gold at an outrageous price, and the United States, which has " lost " in nine months to March, 1920, 450 million dollars' worth of gold. Instead of congratulating South Africa on still having in the East a tolerably good customer for her principal product, now terribly depreciated in purchasing power owing to the misfortunes of Europe, and instead of congratulating the United States on finding customers for this mass of metal which she took in exchange for goods during the War, which so far had done nothing for her except create disturbance by raising prices, and the export of which was likely to bring her prices down (as indeed it has), Mr. Strakosch argued that the United States would be obliged to restore her War-time embargo on the export of gold, and then, if South Africa was on a gold standard, allowing the export of specie, the all-devouring Indian peasant would soon draw away all the gold coin from her. Of course, if South Africa really were on a gold standard, nothing of the kind would happen, because the sovereigns in South Africa would then be no cheaper than 113 grains of gold produced from the mines, and there could be no reason for the Indian peasant to make a dead set at the South African currency.

Confused by all this, the Committee never seriously considered the real practical issue which should have been put before them—whether it would be best for South Africa to keep her currency level with gold or level with the British paper pound. There are many arguments for both courses, and this is not the place to attempt to decide between them. What the Committee—or at least the great majority of the Committee, since the small Labour element fought manfully for sound doctrine—decided to do was to recommend the continuance of the embargo, the discontinuance of the convertibility of paper into coin, and the creation of a new central bank of issue with power to issue unlimited banknotes against 40 per cent. of gold. These proposals remove the two checks—" leakage " of coin by smuggling and the fear of a removal of the embargo—which restrained the banks in the manufacture of currency. On their face they substitute nothing except the requirement of 40 per cent. gold cover. Now, whatever may be thought of the usefulness of such a requirement when the paper is convertible, it is clear that when the paper is inconvertible and expected to remain so it will only stop the manufacture of paper pounds when their value is so reduced by over-issue that it will take nearly a hundred of them to buy gold enough to make forty sovereigns.

Functions of the New Bank.

Until the new bank can be got into working order, the recommendation is that existing banknotes shall be convertible only into gold certificates issued by the Treasury which are themselves inconvertible into the gold which they " certify ": the banks may increase their issues as they please, provided that they keep 40 per cent. reserve against the whole and pay 3 per cent. per annum on any excess of issue above that of December, 1919, and their issues will eventually be taken over by the new central bank.

This bank might, of course, determine to raise South Africa's currency to par with gold, and could do so by reducing the swollen paper issue, but a very different state of opinion will have to be created before it is likely that the board of management will even wish to return to the gold standard. It is much more likely only to desire to secure parity with the British pound, and knowledge of monetary theory will have to be considerably improved before it will be likely to know that, in order to maintain even that low standard, it must not yield to what the Finance Secretary naively calls " the requirements of business "—as if business would not always " require " as much currency as banks and Governments are induced to create for it.

And though the requirements of 40 per cent. cover plus the tax of 3 per cent. on additions to their issues is a fairly strong brake (especially when the 40 per cent. means more than 40 per cent., because the centum is reckoned in a depreciated currency and the 40 in gold) and may perhaps prevent further increase of the paper currency by the existing banks, it is possible that the question may ultimately be not of maintaining a Bradbury standard, but of climbing up to that low level. For the Committee's Report and the progress of legislation on the lines it laid down were promptly followed by changes in values which have greatly widened the gap between the South African pound and gold, and have even brought it slightly below the Bradbury, though it was 7 per cent. above a few months ago.

It remains to be seen whether sounder views and better policy will be the result of this degradation of the South African currency, and of the fact that, instead of the United States having set a bad example by reimposing her war-time embargo on gold exports, as prophesied by Mr. Strakosch, Argentina is preparing to remove hers, and that the Indian situation has also changed in a way which should help to dissipate the groundless alarms with which he inspired the Committee. Much depends on the importance which the central bank and the existing banks attach to the sub-section (par 7, iii) of the new law providing that the suspension of convertibility shall cease on June 30th, 1923. If they really believe that the legislature will not continue it beyond that date, they will take the steps required in order to bring the pound gradually up to par with gold.

EDWIN CANNAN.

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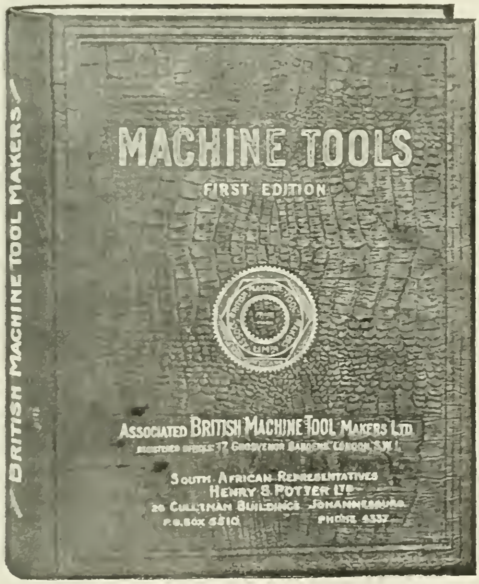

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A Big Asbestos Flotation.

We understand that an important company with a capital of £150,000, styled the Bechuanaland Asbestos Company, is in course of flotation to acquire and exploit a large block of asbestos-bearing claims in the Kuruman district. A considerable amount of the working capital has been provided by Capetown people.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180, Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.
Telephone **913**. P.O. Boxes **963** and **4573**.
Cable and Telegraphic Address: "Mining Journal."

Annual Subscription Rates: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.
Agents for Great Britain and America: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

A PLEA FOR INDUSTRIAL SANITY.

In this issue we deal at some length with the matter of working costs. The subject is by no means new, but the urgency for effecting the reduction of operating charges on the mines of the Witwatersrand was never more obvious than it is at present, and we make no apologies for debating this important aspect of Mr. Weston's letter at some length. The industrial situation is, indeed, most unpromising at the moment. Unemployment is on the increase, and with gold at its present price and working costs at to-day's high levels the position of a number of mines is precarious in the extreme. Most of our mines are merely existing on the premium, and although in well-informed quarters the view is held that for some years to come there will be a seasonal advance in the selling price of gold, it is considered that the probabilities are strongly in favour of a gradual return to normal quotation.

The facts are that when gold drops to £5 per ounce and working costs remain as at present, 16 mines, employing 5,800 Europeans, will be making a loss, and that when gold drops to the old standard no less than 32 mines, employing 14,400 Europeans, will no longer pay for working on the existing basis of costs. These figures reveal the appalling possibilities with which the Rand mining industry is fraught. They show that it is unwise to build any fabric of industry upon the chimera of the gold premium, which apparently exists for the present because British currency is depreciated in terms of the American exchange. It is clear that if the terror of unemployment on a colossal scale is to be removed from our midst, and any sense of stability is to be obtained, we must go to the root trouble of our present evil and try by all the means in our power to reduce the cost of producing Rand gold.

Working costs last month were phenomenally high. It was, of course, an abnormal month, and four mines expended over two pounds a ton milled in above and below ground costs. But in January normal conditions, or rather conditions which have come to be regarded as normal in these spendthrift and chaotic times, prevailed, and it is to be observed that in that month the average recovery of the whole Rand was 6·627 dwts. per ton, whilst expenses were 26s. 3d. per ton. This means that if gold were sold at normal price the whole Rand, on the basis of an expenditure of 26s. 3d. per ton, would make a somewhat smaller margin of profit than a fairly prosperous fruit shop. In actual fact, however, long before this stage was reached 27 of the 39 producing mines would have suspended operations because they would have been unable to recover the 6½ dwts. necessary to cover costs.

This is the position in a nutshell, and it makes it clear that our urgent business of the moment should be the concentration of every effort on reducing working expenses on the mines. The situation requires the close co-operation of employers and employees to the end that our extravagant costs may be brought down to a level of industrial sanity, and it also demands the making of sacrifices not only by the workers along the Reef, but by the higher salaried officials in the head offices as well. For this much is obvious: that we shall be unwise to depend for our livelihood on the incidence of the American harvest, and we shall only court disaster if we base our hopes of paying next month's bills on such a fickle thing as international exchange, which apparently is the governor of the gold premium, and is a chimera, a trap set to catch a financial dream. The only thing that will give us the stability we desire is a rational cost of operating our mines, and it is pathetically true that the present rate of expenditure is not only irrational, but that it threatens to destroy the whole fabric of our industry.

ENEMY SHAREHOLDINGS.

The question of disposing of the enemy shareholdings still hangs fire, and although the fact that the Union Custodian is now on his way back to South Africa after a hurried visit to England is construed in some quarters to mean that co-ordination of policy and price has been arranged between the Union and the British Governments in this important matter, definite news regarding any such settlement is not to be obtained. It appears, however, that counsel for the Custodian of the Union Government and Sir John Simon, acting as counsel for the British Public Trustee, have not been in agreement on the methods of disposal and terms of purchase of these shares.

We dealt at some length with the subject of enemy shareholdings in our issue of three weeks ago, and there is little to add to the tables of values and the suggestions as to the methods of disposal then given. We may, however, remark that market quotations for the stocks involved are less to-day than they were when that article appeared. Valuations now approximate more closely to the tenders submitted to the Custodian. Those tenders were refused. Prices may go still lower, for it is evident that the gathering of the eagles of finance in Johannesburg is not unconnected with this enemy shareholding deal, and it is not their policy to infuse any spirit of optimism into the market when they are anxious to buy a parcel of scrip valued at a million or two upon their own terms. It seems to us that the Government and the financial houses between them have made an appalling mess of the whole business. The Union Custodian, evidently fearing that he would be so much clay in the hands of a syndicate of astute financiers (just as Professor Edwin Cannan declares the members of the "inexpert" Currency Committee were "clay in the hands of Strakosch"), has acted with extreme caution—too much caution, perhaps—in a matter which means much to the finances of the Union. The astute financiers may be relied upon to drive the hardest bargain they can, and the Union Government evidently considered that the offer made by them for the shares held by former enemy subjects required a more detailed discussion with the Home Government's Trustee than was possible over a cable line or through the mail service. Sir Hamilton Fowle therefore made a flying trip to England, and the shortness of his visit and the promptitude with which he has set out on the return journey suggest that matters in regard to disposal of this varied collection of scrip are at least moving.

But in what direction they are moving remains to be seen. One thing, however, seems pretty certain, and that is that the Kaffir share market is only likely to move in one direction, and that is downwards, until the carcass has been stripped to the satisfaction of the eagles.

Mining Notes & News.

Our 30th Anniversary Number.

Our next issue will mark the end of the 30th year of the existence of this journal. Begun in the infancy of the industry in March, 1891, the paper has grown with it through the years, and, despite changes in name and editors, has managed to preserve a certain character of its own. In our next issue an effort will be made to tell something of the pioneers of the Rand, their successes and vicissitudes, and to commemorate by special features this milestone on our way.

* * * *

The February Output: Half a Million Decline.

The gold output for the Transvaal declared by the Chamber of Mines reflects faithfully, in a decrease of 93,456 fine ounces and a smaller value of £525,527 compared with January, the conditions which are responsible for the decline. The market value is taken for February at £5 3s. 9d., as against £5 5s. in January, a drop of 1s. 3d. per fine ounce; the month contained only 24 working days, as compared with its predecessor's 26, while the eight days' strike seriously affected the output of whole groups. The following are the figures in detail for February:—Total output, 558,137 ounces; decrease, 93,456 ounces. February value, £2,895,336; January value, £3,420,863. Witwatersrand, 543,767 ounces; decrease, 93,658 ounces. Outside districts, 14,370 ounces; decrease, 202 ounces.

* * * *

Dundee Coal Meeting.

The chairman at the annual meeting of the Dundee Coal Company, held in Durban on Thursday, in the course of an address, said the policy during the past year had been to supply markets where there was a possibility of permanent business. That this policy was correct was already manifest, as, owing to the sudden change which had taken place, many collieries were anxiously seeking business, whereas they were keeping their miners as fully occupied as railway facilities would permit. In addition to fixed contracts for export to certain destinations, there was every likelihood of export developing to the Near East, in consequence of the Indian Government proclamation that export will be prohibited as from March 31 next year. They were already sending cargoes to Ceylon as the result of this.

* * * *

Bond vs. Mineworkers' Union.

The recently organised South African Workers' Bond is instructing its members who are engaged on the mines to break away from the Mine Workers' Union on the fifteenth of March, and a fight between these two organisations appears to be impending. The S.A. Workers' Bond claims that by establishing sound economic relations with the agricultural community the produce of the land can be sold direct to the workers, thereby eliminating the middleman and resulting in a reduction of costs of living which would in turn react favourably on the working expenses of the mines.

If the Bond can really achieve much in this direction we wish that organisation all success on the fateful "Ides of March." We shall fully approve of Brutus if he succeeds in assassinating the Cæsar of high costs and labour unrest, even though the reduction of working expenses on the gold mines is not the dominant consideration of Brutus. But we almost mistrust our senses when we hear the spokesman of the Bond declare: "Not that I loved Cæsar less, but that I loved Rome more."

* * * *

South African Coal.

The *Shipping Gazette*, referring to coal shipments from South Africa, says that now prices have fallen to the present level it is becoming evident that coals from Natal and the Transvaal are incapable of competing for the trade in North Europe.

It is reported from Copenhagen that two 8,000-ton steamers are now on the way to Copenhagen with South African coal bought three or four months ago at £11 a ton c.i.f. The shipment was delayed through an accident at the pits and detention in loading, whereas the receiver can buy English coal at 65s. per ton c.i.f. in Denmark.

* * * *

Daggafontein Mines.

The following cable has been despatched to the London office of this company for publication:—"In consequence of the funds of the company having again become exhausted, and the impossibility in the present unsatisfactory state of the money market of raising further funds, the directors have reluctantly decided to suspend all mining operations until the times are more favourable to the raising of new capital. Upon the reconstruction of the company in 1916 a sum of £300,000 was provided for working capital, and at a later date a further sum of £250,000 was subscribed by option-holders exercising their rights to take up 250,000 new shares at par. These funds became exhausted in 1919, and since then the Consolidated Mines Selection Company and friends have advanced altogether an amount of £450,000. A total sum of £1,000,000 has thus been provided for the shaft-sinking and development of Daggafontein Mines since the reconstruction of the company. As soon as there is an improvement in the money market your directors will endeavour to arrange for the provision of further funds, so that the development of the property may be resumed."

* * * *

The Big Rhodesian Mine Strike.

Latest news from Rhodesia is disquieting. It was believed that negotiations towards a settlement of the mine strike were proceeding smoothly, but a disturbing development occurred on Wednesday. Two members of the A.E.U. National Executive, Messrs. Matthews and McGrath, arrived on Tuesday from Johannesburg and had meetings with the Executive of the Rhodesia Mine and General Workers' Association and also with the local A.E.U. branch.

As a result of these conferences, a working arrangement was apparently arrived at between the A.E.U. and the Association, for on Wednesday morning an ultimatum was presented to the Mine Owners' Association by the local A.E.U. secretary on behalf of the combined unions demanding a conference with a view to ending the strike at Shamva and Wankie and the lock-out of members of the Rhodesia Mine and General Workers' Association on the other mines. Failing a satisfactory reply by 2 p.m., all the A.E.U. men, it was stated, would be withdrawn from all the mines.

The Owners' Association rejected this proposal, reiterating that, as a preliminary to any conference, they must have a guarantee that, while being prepared to recognise trade unions, they should not be dictated to as to whom they should or should not employ.

On the latter point, it was understood, previous to Wednesday's development, that the union would give the required pledge provided the union practice was observed and coloured labour was only introduced by consent.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

Forthcoming Meetings of Technical Societies.

Geological Society of South Africa. Johannesburg. March 11th.

Institute of Mining and Metallurgy.—Annual meeting. London. March 17.

American Society Mechanical Engineers.—Chicago, Ill. May 23-26.

Forthcoming Company Meetings.

Elandslaagte Collieries.—Twentieth annual general; Durban, March 17th.

Wolhuter.—Twenty-third ordinary general; Corner House, March 23rd.

Barrett's Rietfontein Syndicate, Ltd.—Ordinary annual general meeting; March 30.

Delagoa Bay Lands Syndicate, Ltd.—18th ordinary general; March 30.

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Transvaal Consolidated Land and Exploration Co.—26th Ordinary General, Corner House, June 15.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Engineering.

West Bank Dock Electric Generating Station.—*The Engineer*, Feb. 11, p. 148.

A Pneumatic Metal Scraping Machine.—*The Engineer*, Feb. 11, p. 160.

The Governing of Steam Turbines. J. P. Chittenden.—*English Electric Journal*, Jan., p. 178.

Iron and Steel.

Basic Open-Hearth Melting Shop Equipment and Practice.—*Iron and Coal Trades Review*, Feb. 11, p. 204.

Coal and By-products.

Froth Flotation Applied to the Separation of Coal.—*Iron and Coal Trades Review*, Feb. 11, p. 197.

By-Product Coke Practice at the Ford Plant.—*Iron and Coal Trades Review*, Feb. 11, p. 199.

Canadian Practice in Picking Belts.—*Iron and Coal Trades Review*, Feb. 11, p. 202.

Recent Developments in the Microscopic Study of Coal.—*Canadian Mining Journal*, Jan. 28, p. 64.

Mining.

On the estimation of Ore Reserves. J. D. Kendall.—*Mining Magazine*, Feb., p. 91.

The Physical Bases of Tin-Dressing. R. T. Hancock.—*Mining Magazine*, Feb., p. 80.

Shift-Bossing. By "Wyath."—*Mining Review*, Melbourne, Feb. 5, p. 162.

Industrial.

Raw Materials for Industrial Alcohol Production. Dr. A. Juritz.—*Journal of Industries*, Feb., p. 167.

The Mining Exhibition.

Lectures at the exhibition, in the Assembly Room, on the first floor:

Friday, 11th March, at 8 p.m. "Miners' Phthisis," by Dr. A. J. Orenstein, C.M.G., illustrated by a film specially prepared by the African Films Trust, Ltd., for the Transvaal Chamber of Mines.

Saturday, 12th March, at 8 p.m.: "Efficiency in Mining," by Mr. R. H. Wonnacott, Superintendent, Government Miners' Training Schools on the Witwatersrand.

Wednesday, 16th March, at 8 p.m.: "Mine Accidents," by Mr. L. G. Ray, A.R.S.M., Assistant Inspector of Mines, Johannesburg District.

Metal Markets.

On the metal market during the week there was a recrudescence of pessimism except in pig lead, which showed a sharp upward reaction. Copper was most sensitive, owing to developments in London and the threatening coal difficulties, which are against the expansion of legitimate business. Tin collapsed owing to the Straits Government having ceased purchasing tin and the consequent fears of the resumption of sales by Straits smelters on terms in line with London. The consuming market is unsatisfactory.

Lead showed improvement; active selling ceased, consumers buying more freely. Spelter was steady, there being no pressure to sell; buying was very poor. As regards iron and steel, owing to the financial uncertainties and the somewhat threatening aspect of the coal question, coupled with the prohibitive cost of home production and the intense paralysis of business, there is no immediate prospect of relief in the home industry.

Latest price of gold, £5 5s. 9d. per oz.

Concerning Mines and Men.

Mr. L. Reyersbach, formerly a prominent figure in Rand mining circles, has been spending a few weeks in Capetown, and intends paying the Rand a brief visit before returning to London.

* * * *

Mr. James Whitehouse, manager of the Village Deep, is proceeding on leave of absence at the end of this month. Mr. Coe, formerly manager of the Modder East will act as manager of the Village Deep during Mr. Whitehouse's absence.

* * * *

Mr. W. L. White, who resigned from the position of Consulting Engineer to the "J.C.I." group last week, is on a health visit to the Cape. Mr. White's health broke down on his return to England, but he is now feeling the benefit of the South African climate.

* * * *

The death of Mr. John Wright, of the firm of Wright, Boag & Co., Ltd., removes one of the best known men in the engineering life of the Rand. Mr. Wright had been in ailing health for some months and he passed away at his residence, 54 Webb Street, Yeoville, on Sunday morning. He was predeceased by his wife over 20 years ago and leaves a son and daughter.

ENGINEERING SECTION.

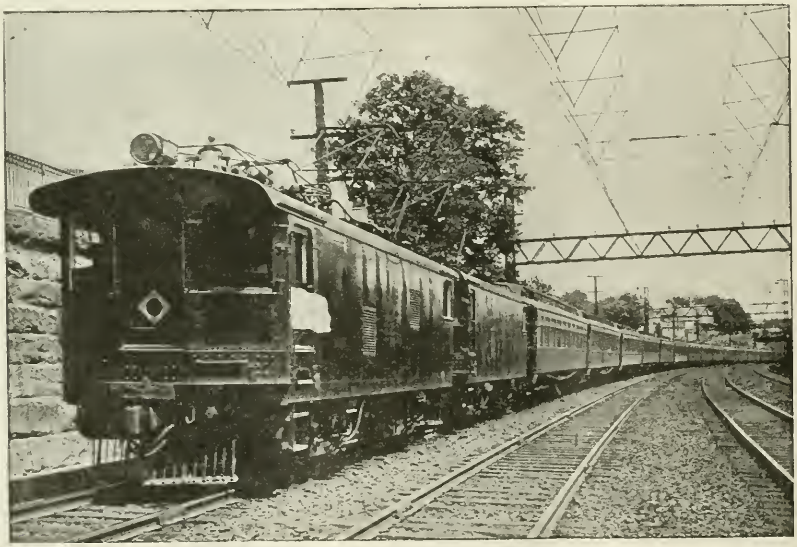
The First Steps in S.A.R. Electrification.

MR. F. E. MILLS SUPPLEMENTS THE MERZ & McLELLAN REPORT—LIMITED NUMBER OF FIRMS WHO CAN TENDER—GREAT INTEREST IN THE PROJECT—AMERICAN vs. BRITISH ENTERPRISE—POWER SUPPLY AT DURBAN AND CAPETOWN.

The fact that tenders have been called for the electrification of two sections of the S.A.R. brings the whole question of the change over of our railways from steam to electricity again into prominence. Mr. F. E. Mills, the very able electrical engineer to the railways, is to remain in England until the tenders are in, which is by May next; and as the result of his recent visit to most of the important electric railways of the world it is understood that he has made a very valuable report to the Union Government. Of course, the whole subject was exhaustively covered in the classic report by Messrs. Merz and McLellan, extracts from which appeared in our columns. Only the largest electrical engineering firms can hope to compete for the work, and they number probably not more than half-a-dozen, equally divided between Great Britain and America. An interesting friendly contest will doubtless take place between British and American firms.

The First Steps.

The consulting engineers have recommended the electrification of certain sections of the South African Railways in the Cape Peninsula, as also at Durban, Glencoe and Witbank, at an estimated gross capital expenditure of £15,427,382. The Administration has approved the adoption of the principle, the work to be undertaken in sections and spread over a period of years. In so doing it recommended that funds be voted immediately for the electrification of the Capetown-Simonstown suburban line, and the section of the Natal main line from Durban to Maritzburg, including the original line and deviations, and the lines to the Point and Bluff. It was urged that work should be commenced on these two sections at the earliest possible date. The revised estimates of capital expenditure in these cases, based on present-day prices, total £1,464,000 for Capetown, and £2,921,400 for Natal, or £4,385,400 in all. An important aspect of the situation is the relationship of these proposals to the general use of electricity throughout South Africa, and the supplying of other consumers. The consulting engineers state: "A careful study of the present and future position may point to the advisability of adopting some measure of unification of the various electricity undertakings throughout the country, both municipal and private; and it would undoubtedly be to the general advantage as well as to the benefit of the Railway Administration if power stations installed for supplying railway requirements could form part of such a unified scheme." Sir William Hoy, in view of recent interruptions to municipal services, doubts the wisdom of committing the railways to supply from municipal sources, while on the other hand he is not anxious that the Administration should undertake the sale of electric



A Typical Electric Railroad in the U.S.A.

energy if this can be avoided. He suggests a national scheme under which the electrical requirements of the whole Union would be generated and distributed either directly under Government control or regulation, or by or under the auspices of a special electricity authority with statutory powers. Co-ordination of electricity supplies has received prominent attention of late in Great Britain. Large savings, cheaper supplies, and the stimulation of industrial development, are among the possibilities of a unified system. Seeing that in any event the sections of line now recommended for electrification will need their capacity enlarged, either on this principle or alternatively by the expansion of the existing methods, in the near future, the proposals under consideration appear essentially sound. Subsequent extensions, and the general question of the future treatment of the power problem, will have to be dealt with in the light of the experience gained.

Power Supply at Durban.

In regard to the question of local power supply, the consulting engineers state: "The situation in Durban, we believe, is that the existing power station is scarcely large enough to supply the present requirements of the municipal area, and cannot practically be extended. It is possible that some arrangement might be made for the erection of a new station which would supply the municipal area and the railway. This combination of the two loads would be of definite advantage to the Corporation and the Railway Administration, as it would enable larger units to be installed than if the loads were kept separate, thereby reducing capital outlay and operating expenses.

Power Supply at Capetown.

"The power supply at Capetown is slightly different. We understand that the Municipality will shortly be taking over the Tramway undertaking, and will then have to provide power for the tramway service from their own station close to the docks, which at present supplies the municipal area as well as several small areas in the Cape Peninsula. The plant already installed in this power station is not sufficient to meet all demands when the tramway load is added to the existing load, and we understand that the Town Council have already authorised the expenditure of a large sum of money for the purpose of modernising the station and increasing its capacity with a view to future requirements. It is apparently quite possible to instal sufficient additional plant to meet the total requirements of the municipal and other areas, the tramway and the railway. The expansion of an old power station is, however, always costly, and is attended with difficulties arising out of the original design, and it is generally impossible to obtain the same degree of security against breakdown and the same economy of operation as in a new station containing modern plant built to the most up-to-date design."

We hope to print some further interesting points regarding the subject in an early issue.

The Biggest Hoist in the World.

A CAPACITY OF 13,300 FEET.

In a footnote to Mr. Clifford's valuable paper on a scheme for working the City Deep mine at a depth of 7,000 feet, appearing in our issue of a fortnight ago, we alluded to deep mining in the Michigan copper field. It is now of much interest to note that the Quincy Mining Company, one of the principal propositions in that district, recently placed in operation its new Nordberg hoist at No. 2 shaft. It is believed to be the largest hoist in the world. It has a winding capacity of 10,000 ft. of $1\frac{5}{8}$-in. rope reaching down an inclined shaft to a vertical depth of 6,600 ft. When winding the rope down the second cone of the drum, it has a capacity of 13,300 ft., reaching to a vertical depth of 8,600 ft. The hoist operates in balance, raising a load of 20,000 lbs. per trip, and is designed for a rope-speed of 3,200 ft. per minute. The drum is of the cylindo-conical type so familiar in the Lake Superior copper district. There are eight impulses per revolution and together with the great mass of the drum, which weighs 516,000 lbs. without the shaft, practically all pulsation in the rope is eliminated. The drum is built up of 48 sections securely bolted together and thoroughly trussed within. This arrangement prevents any deflection of the drum-shaft. The hoist is fully protected by an improved safety stop, whereby the throttle-valve is automatically closed as the skip approaches the landing. In case of over-winding, the engine is also reversed and the brakes are applied automatically. The hoist cannot be started in the wrong direction. Over-speed is prevented by a speed governor which controls the cut-off cams of the valve-gear. The total weight of the engine with condensing equipment is 1,765,000 lbs. The engine covers a floor space of 60 by 54 ft. and stands 60 ft. high from the bottom of the foundation to the top of the drum. The weight of the skip is 10,000 lbs. The weight of the 10,000 ft. of rope is 41,500 lbs. The time required for one trip of 10,000 ft. is 4 min. 8 sec.

The Mining Exhibition.

FEATURES OF ENGINEERING INTEREST.

Exhibits of special engineering interest at the Chemical, Metallurgical and Mining Society Exhibition at the Scientific and Technical Club include:

Rand Mines Metallurgical Laboratory: Apparatus for testing the viscosity of grease.

H. Jago, New Modderfontein G.M. Co., Ltd., Benoni: Pulp distributor box.

Ussher Inventions, Ltd., 7 Winchester House, Main Street, Johannesburg: Ussher hose and pipe clamps; water blasts, cocks, manifolds, shovels, etc.; Hume pipes, stellite, rock drills, rigs, soft soap, etc.

The French Engineering Works, Ltd., 18 Anderson Street, Johannesburg: Rock drill; motor spares.

Samuel Osborn (South Africa), Ltd., 11 and 12 Cotts' Buildings, Rissik Street, Johannesburg: "Mushet" high-speed twist drills; "Mushet" high-speed steel; hollow drill steel, circular saws, hack saw blades, files, etc.; "Keystone" pressed steel split pulleys (British manufacture); model of Osborn's "W. & S." patent tube mill liners.

Wm. Daly, East Rand Trades School, Boksburg: Tappets for stamp mills; grip on stems being three times greater per key than with old design; cam shaft collars on same principle at tappet, and which is giving entire satisfaction on the mines.

H. W. Pridgeon, West Springs, Ltd., Springs: Model of steady head.

Andrew Orr Arbuckle, Simmer and Jack G.M. Co., Ltd., Germiston: The Fraw stop block for side haulage trucks; the idea being to demonstrate the use and purpose of a patent side buffer.

J. W. Straw, City Deep G.M. Co., Ltd.: Improved blowing out pipe, for exposing sockets and closed up holes after blasting in gold mines on the Reef.

Henry S. Potter, Ltd., 26 Cullinan Building, Johannesburg: Photos; turbine fan; intensifore lubricator.

George Loggie, Witwatersrand Deep G.M. Co., Ltd.: Shovel handle.

G. Williams, Glen Deep Germiston: Improved shifting spanner; improved pipe wrench.

E. G. Gorvett, Geldenhuis Deep, Ltd., Cleveland: Adjustable clip for clutch straps as applied to the Seymour and other disc clutches.

The Central Mining and Investment Corporation and the Transvaal Land and Exploration Co., Ltd., The Corner House, Johannesburg: Magnetic separator; demonstrations will be given at 5 and 8 p.m.

The Denver Rock Drill and Machinery Co., Ltd., Southern Life Buildings, Main Street, Johannesburg: Rock drills and accessories; model No. 66 super dreadnaught drills; model No. 50 clipper drills; models Nos. 71 and 72 "Waugh" air-feed hammer drills, equipped with improved water chuck-end; model No. 90 "Waugh" auger drill, for coal work; Clarke positive displacement air meter for measuring air consumption of pneumatic tools and rock drills. Denver shanking machine for making shanks on Jackhammer drill steel; air and water hose of various constructions, with fittings; "Duxbak" waterproof leather belting; "Denver" rubber conveyor belting; "Bulldog" rubber transmission belting.

Andrew Restieaux & Co., 150 Albert Street, Johannesburg: White anti-friction alloys; alloys of mining interest; solders, brazing spelter, plastic metal, fusible metal, bronzes.

William A. Quince, Simmer and Jack Proprietary Mines, Ltd., Germiston: Propeller steel for Jackhammer.

Ralph Hush, Geldenhuis Deep G.M. Co., Ltd., Cleveland: The "Hush" pulveriser for assay office use; planetary joint for friction clutch arms, etc.

Hannam, Bonsall & Co., 7 Maxwell Buildings, Harrison Street, Johannesburg: Monroe calculating machine; "Thermoid" brake lining; "Manox" safety set screws; "Benal" anti-corrosive condenser tubes; chilled iron truck wheels; Apexior boiler compound; brazing lamps and silent Primus stoves; hollow shafting for central lubrication; automatic compressed air lubricators.

G. A. Sheeley, P.O. Box 3371, Johannesburg: Section of tube mill and tube mill liner.

D. G. Malherbe, P.O. Box 161, Germiston: Water blast.

Kelly, Burnie & Co., Ltd., 5 Winchester House, Main Street, Johannesburg: Kelco Patent shovel points and other mining specialities.

M. Redmond, P.O. Box 1750, Johannesburg: Model of headgear.

S. R. J. Maynard, 152 Market Avenue, Benoni: Converted back head, with adjustable tube to prevent fogging; improved front cylinder washer to prevent air from escaping over the piston and through chuck.

Consolidated Pneumatic Tool Co., Ltd., 190 Main Street, Johannesburg: Portable pneumatic rivetting hammers; drilling machines; grinders; portable electric drilling machines and grinders; accessories.

The Climax Rock Drill and Engineering Works, Ltd., 49 Stella Buildings, Rissik Street, Johannesburg: 2¾ in. cradle hammer drill and parts; Johannesburg No. 1 water feed hand hammer drill and parts; Johannesburg No. 1 mounted on cradle with feed screw (note the double feed obtained by means of the sliding clamp); Hydromax dustless raising drill; sundry rock drill spare parts and air cocks; pneumatic tools.

Ingersoll-Rand Company, Exploration Building, Commissioner Street, Johannesburg: Rand Company Offices: First Floor, Exploration Buildings, Commissioner Street, Johannesburg; 'Phones 1871 1872; P.O. Box 1809; telegraphic address, "Outsider," Johannesburg: This company is showing in the centre of the large basement hall an important exhibit of mining machinery, pneumatic tools, etc. Among the rock drills come first the Ingersoll Leyner hammer drill—the original water feed drill. The next group is the telescope air-feed hammer drills—BC-21, a dry drill, BCW-22, and CCW-22 of the wet type; these drills find their best use in back stoping, and in fact any up holes. Then comes the "Jackhammer family," in five sizes, for different classes of work. The Jackhammers now exhibited are the baby BAR-33, the BBR-13, BCRW-430, DCRW-13, and DDRW-13, the largest tool. Samples of hollow Swedish steel of specially high quality are also on view. Mines using this steel are obtaining the highest efficiency from the drills they operate. The "Little David" range of pneumatic tools call for special note, representing as they do the very latest type of labour-savers—their special features being their strength, simplicity and durability. Here will be found the Little David rivetting hammer and holder-on, chipping hammer, Little David drills of various weights and capacities, portable and pedestal grinders, close quarter drills and close place angle-drills. The internal gear of these tools is also exhibited. The sand rammer, not yet properly appreciated by our foundries in Africa, will also be seen. A novelty is the Perfection engine cleaner, which will commend itself promptly enough to the practical mind. While a safety guard, much appreciated in compressor practice, is featured in the "Hodges fusible plug." This exhibit will repay the attention its interest demands from the many intelligent visitors who will spend some time at this stand.

Woodworking Machines, Saw Benches, Band Saws, Planing Machines, etc. A representative of a firm of English manufacturers will be in South Africa in April and will be pleased to call on merchants and buyers of this class of machinery. Please communicate to Mr. J. Bradbury, care "S.A. Mining Journal," Box 963, Johannesburg.

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POINTS FROM THE CHAIRMAN'S SPEECH AND CONSULTING ENGINEER'S REPORT—ATTACKING THE VANADIUM AND LEAD ORE BODIES—SATISFACTORY EXPERIMENTAL WORK.

We take the following extracts from the speech of Mr. W. P. Taylor, made at the statutory meeting of this company, held a few days ago, and from the report of the consulting engineer, Mr. W. Grindley Ferris:

All the necessary machinery required in the earlier stages of the development of this property has been purchased, and working operations have commenced. In order to profitably attack and handle the vanadinite and lead ore bodies and thoroughly test the overburden material, a main haulage incline, on which a considerable amount of work has already been done, has been started approximately 500 feet south of the small vertical shaft, which was sunk by the former owners of the property to intersect and exploit the vanadinite ore bodies. This incline has a grade of 1 in 1, and at a distance of 100 feet south of the small vertical shaft referred to will have attained a vertical depth of approximately 75 feet, and exposed a section of the mineralised mass 100 feet in width, in which the vanadinite ore bodies met with on the 40 and 60 feet levels should be located. This haulage will enable ore to be drawn from the lead and vanadinite ore bodies, will admit of work being carried on well below the 75 ft. horizon, and allow of exploratory work on these ore bodies being conducted in all directions. The work on this incline is being pushed ahead as rapidly as possible, and it is expected that this will be completed in about three months' time. Prospecting work to prove the continuation of the vanadinite and lead ore bodies is being proceeded with. The work so far accomplished indicates the presence of a considerable area of mineralisation in which the enrichment of the vanadinite ore bodies occurs in more or less definite bands or layers.

Opinion of Experts.

In this regard we quote the following from the joint report on the property recently made for the Mines Department by Mr. Malcolm Ferguson (Inspector of Mines, Krugersdorp), and by Dr. Percy A. Wagner (Government Geologist), and published in this journal, 11th December, 1920:

The samples taken on the face of the quarry show the consistent nature of the lead contents throughout the deposit. We are of the opinion that a considerable deposit carrying lead and vanadinite ore exists, the extent of which it is impossible to determine at present."

Cheap Mining.

The soft ore can be mined very cheaply; in fact, cheaper than an ordinary diamond mine working in yellow, and the extreme lightness of the manganese, in which the lead and vanadinite occur should enable large quantities of this fine ore to be treated daily. Owing to recently caved ground, the workings on the vanadinite ore body on the 40 ft. level, where Dr. Merensky's sampling showed payable values, are at present inaccessible. Thirteen composite samples of the ore body on the 60 ft. level, taken over long stretches and from different parts of these workings, gave results varying from ·85 per cent. to 3·13 per cent. vanadic pentoxide, or a combined average of 1·19 per cent. Experimental work in connection with the treatment of this ore is being conducted, and the results achieved to date are satisfactory. The results of the test work, in what appears to be overburden, indicate that this material is not barren and that there is hope of this large mineralised mass carrying lead and vanadinite in payable quantity, and in a state which will admit of profitable concentration. It is probable that by putting through large quantities and in working on a scale commensurate with the size of the deposit, it will be found that this overburden material will produce a product after preliminary treatment that can be again concentrated, and every investigation is being made on these lines.

The Value of Vanadinite.

Vanadinite is a new mineral, as far as this country is concerned, and the treatment of the ore bodies containing this mineral has in consequence to be carefully studied. With its high specific gravity it should not be difficult to obtain a concentrate yielding a high marketable percentage of this valuable mineral.

Numerous letters have been received in connection with the purchase of the vanadinite concentrates, and several agents in Johannesburg, representing large firms in Europe, have approached the board of this company with proposals in this regard, so that there would appear to be no difficulty in selling the product at a good price. The greatest leaders of the steel industry have drawn attention to the want of vanadium, and it is probable that all the tools of the world and rustless steel as well, will in future contain this valuable metal.

The Lead Occurrences.

With regard to the lead contents, some 8,000 tons of lead were recovered by former owners from approximately 100,000 tons of ore mined from the open-cast workings. From the considerable area of similar mineralisation already proved, it is confidently expected that a large tonnage of lead, in the form of galena and its oxidation products, will be profitably recovered. With the mining of both lead and the valuable mineral vanadinite, this company should have a prosperous future. A shot drill has been secured and boring operations for a water supply are being carried out. A compound which provides accommodation for 100 boys has been erected and is in use. A plentiful supply of native labour is available. The cash in hand is sufficient to carry out the necessary exploratory work, and to erect a plant for the concentration of lead and vanadinite from the large ore bodies. Mr. A. Stephens, late manager of the West End Diamond Mine and Zaaiplaats Tin Mine, has taken over the management of the mine, and Mr. V. Grindley Ferris, of Union Castle Building, has been appointed consulting engineer.

Letters to the Editor.

POSTMAS PROSPECT: A PERTINENT INQUIRY.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I note in your issue of 26th February a short announcement to the effect that the Postmas Prospect are liquidating. Part of this announcement reads: "The directors have been greatly disappointed in the working of the reduction gear, from which so much was promised, and on which a very large sum of money has been expended." Then further on: "The directors are, however, from evidence in their possession, quite satisfied with the prospects of the Postmas properties, and in particular of the great value of the No. 1 mine," etc. To start with, I have not seen this particular mine proclaimed as a mine in the *Government Gazette*, as required by the provisions of the Act. Why is this? Then I would like to know exactly how many carats of diamonds were registered as being recovered from this particular prospect, before it was decided to erect the expensive reduction gear alluded to above. Then, too, one would like to know what the total recoveries have been from first to last.

The only evidence that the directors could have in their possession, which should satisfy them as to the prospects of this particular venture, should be a parcel of diamonds.

If the foregoing three questions were answered one would be able to judge whether the directors had sufficient justification for the erection of such an elaborate reduction gear.—Yours, etc.,

W. B. COLLINS.

Goedgedacht, Postmasburg, C.P.,
2nd March, 1921.

[We have deleted a line from our correspondent's communication.

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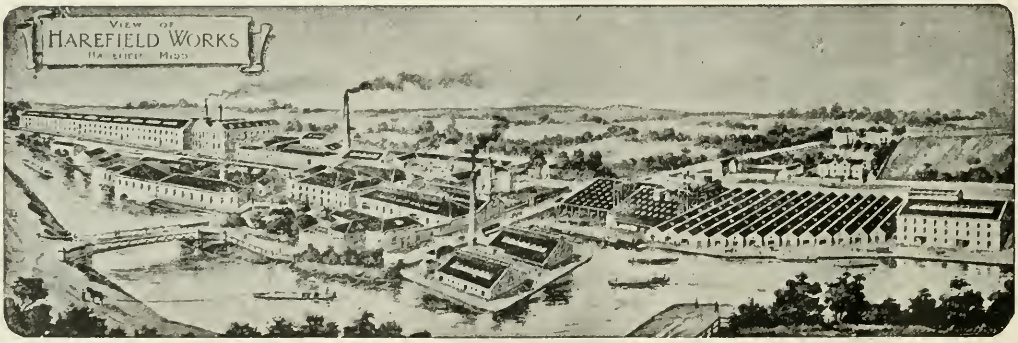

VIEW OF GENERAL ASBESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet of "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

Financial Notes and News.

THE RIDDLE OF THE EXCHANGE—AN AMERICAN BUSINESS VIEW. "NOT REGISTERED IN THE O.F.S."—DOES THE DIAMOND SLUMP MAKE SOUTH-WEST AFRICA BANKRUPT?—THE STANDARD BANK DIVIDEND.

American bankers are hard put to it to explain to their many inquiring customers why overseas buyers of American goods cannot pay for them. A well-informed and closely-reasoned effort to put the matter in "fool-proof" form was recently attempted by an important body known as the First Federal Foreign Banking Association of New York. The facts given in that very lengthy treatise, entitled "The Riddle of the Exchange," are not new to our readers, but one or two of the conclusions may be of interest.

"The whole exhibit is remarkably suggestive of a big fact—that metal gold is the fundamental money of the world at this moment to the extent that money remains a measure of value. We can talk about dollars being dear, francs being at a discount in exchange for sterling, and all that, but, to a great extent, they are at varying premiums and discounts to each other simply as they change their value as regards gold.

"We do not mean to say that unbalanced trade and disorganised credit are not having their effect, with the speculation in exchange and in the actual paper money sometimes depressing or raising values for a few days. Unbalanced trade means (now that hardly any nations are permitting free payments in gold), that when a country imports a lot more than it exports, and has only its depreciated paper currency to offer as payment, the world is very critical about the value of that local currency, and won't take it in exchange at any unvarying value. This is not any reprehensible attitude on the part of the world's international money markets. Every country is doing the same with every other country's credit money. Every transaction bring up the question, 'What is the chance of my getting out of this money to-morrow, what I pay for it to-day?' Every day there is apt to be a change of opinion, because of some new information to the effect that the balance of trade will be changed or the outstanding amount of paper-money issued on credit is growing (or may be less) or the general finances of a government are being sharply criticised at the moment, or the general business situation looks serious—causing an honest change of opinion about the value of any kind of money that is issued on credit, and not freely interchangeable at par with gold. The dollar stands steady as compared with gold because the United States is now the only *dependable* free market for gold, where the holder of a dollar can be sure of obtaining from the Government a dollar's worth of gold on the asking if he needs it to settle a foreign debt.

"Nearly all the other moneys of the world are fluctuating, because of the fact that they represent only a credit backing—perhaps only a promise of redemption in goods at some future time. There are moneys (like Argentina's and Uruguay's) that are backed by plenty of gold, but the Governments decline to allow the export of gold even to settle bills, which depreciates the value of the money, now that these countries are exporting in greatly reduced amounts and that they must pay out (for goods and standing debt) more than is currently coming to them. Australia's Government has gone so far in interference with the payment of international debts in gold that even some of the strongest and most solvent business concerns could not settle foreign bills at all.

"To show how unreasonable it is for an English customer to criticise America for the current imparities of exchange, we call attention to the fact that in England's own foreign commerce, the pound sterling is itself at a much greater premium over the French franc, the Belgium franc, the Italian lire and even the Brazilian *mil reis* than the dollar is over the pound sterling."

This is, of course, mere simple truth, but it is expressed more clearly than usually found in essays dealing with the matter.

A good example is set to the promoters of local companies by the S.A. Nickel and Talc Mines, Ltd., in respect of registration in the Transvaal. The provisions of the Company Law of this Province demand far more publicity and straightforwardness in regard to a flotation than do those of any other part of the Union, and registration at Pretoria is, therefore, a guarantee of the vendors' belief in their claims for their property. Some otherwise sound flotations have in the past laid themselves under unwarrantable suspicion by having recourse to the Free State, where the law is notoriously lax and loosely drafted.

* * * *

The finances of the South-West African Protectorate are so closely bound up with the state of the market for diamonds that one is tempted to wonder what will make up for the necessarily big deficit in its budget for the coming year. The old German Government, it will be remembered, had for many years to finance its South-West African Colony, and was only relieved of the burden by the diamond finds, from which its substantial share just before the War more than met the bills. The present Protectorate, which of course is under mandate from the League of Nations, can only balance revenue and expenditure by the big return it receives from the Consolidated South-West Diamond Mines, when the diamond market is good. How it will "carry on" when the market is bad remains to be seen.

* * * *

The Standard Bank has resolved to pay out of the profits for the period to December 31, 1920, a second interim dividend of seven shillings. As the bank's accounts are now made up to March 31, the final dividends will be announced in the May report, and the accounts for fifteen months to March 31, 1921, will be submitted for shareholders' approval at the general meeting to be held in July.

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The Week in the Sharemarket.

TENDENCY STILL DOWNWARDS—BUSINESS VERY RESTRICTED—A FEW BRIGHT FEATURES.

The satisfaction with which the names of the new Union Cabinet was received on 'Change was not reflected in the course of prices, and Thursday's quotations were in most cases the lowest for the week. The depressing factors of the past few weeks remain with us, and no activity and no improvement can be expected till they are removed. Though we have nothing definite to go upon, it is to be hoped that the new strong Cabinet of business men will lose no time in settling the ex-enemy share question. The Custodian is now on his return to the Union, and it is reasonable to suppose that we are within measurable distance of a way out of the impassé. The latest gold quotation obtainable is 105s. 9d. in London, and there are indications that it may remain firm around that figure. The German trouble has, of course, an unsettling influence, and some wiseacres profess to believe that business cannot recover till finality in that quarter is reached. Apart from gold shares, the declines in which are set out only too clearly below, the feature of the week was provided by African Oils, which were active on the news that a year's option had been secured by the Royal Dutch Shell people. It may be that this event heralds the beginning of an industry that may yet grow to national importance. At any rate, it furnishes a glimmering of light in the otherwise gloomy market of the week.

	Fri., Mar. 4th.	Sat., Mar. 5th.	Mon., Mar. 7th.	Tues., Mar. 8th.	Wed., Mar. 9th.	Thurs., Mar. 10th.
Anglo-Amer. Corp. ..	18 9	18 10½	18 9*	18 9	18 6	18 0
Apex Mines.. ..	6 9*	6 9*	7 0†	6 9*	6 9*	7 3†
Bantjes Consolidated ..	4 2*	4 2*	4 1*	4 1*	4 0*	4 1*
Brakpan Mines	50 0*	50 0*	50 0*	50 0*	50 0*	50 0*
Breyten Collieries	—	—	—	—	—	5 0*
Brick & Potteries	4 6*	4 6*	4 6*	—	—	—
Bushveld Tins	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Cinderella Cons.	2 0	—	2 0*	2 6	2 3*	2 3*
City & Suburbans ..	7 0†	6 0*	7 0†	—	6 9†	—
City Deeps	38 9*	39 0*	—	38 6*	—	39 0*
Clydesdale Collieries ..	28 6†	25 3*	28 6†	26 0*	—	—
Cons. Diamonds	13 0*	12 9*	12 6*	12 8*	12 6*	—
Con. Investments	22 9*	—	21 0*	22 6*	21 0*	—
Con. Langlaagtes	12 0†	12 0*	—	—	13 0†	—
Con. Main Reefs	10 9*	10 9*	10 9	10 6*	10 9*	10 6
Con. Mines Selection ..	17 0†	—	17 0†	15 6†	15 6†	—
Coronation Freeholds ..	1 0*	1 0	1 0*	1 0*	1 0	—
Coronation Syndicates ..	—	—	—	5 0*	5 0*	5 0*
Crown Diamonds	2 0*	2 1*	2 0*	2 2*	2 6*	3 0
Crown Mines	41 0	37 6*	—	—	37 6*	41 0†
Daggafontein Mines ..	3 0	3 0	3 3	3 3	3 2*	3 3*
Durban Roodepoort Deeps	—	3 0†	3 0†	3 0†	—	3 0*
East Rand Coals	2 3†	2 0*	2 0*	2 0*	—	—
East Rand Deeps	—	—	0 6*	—	—	—
East Rand Props.	5 4	5 6†	5 0	—	5 0	—
East Rand Debs.	£71†	£71†	£71†	£71†	£71†	—
Eastern Golds	0 6*	0 6*	0 6*	0 6*	—	—
Frank Smith Diamonds ..	2 0	2 1	2 3	2 3	2 4	2 1*
Geduld Props.	46 3	46 3	46 6	45 9	45 9*	45 6*
General Minings	7 0†	—	—	—	—	—
Ginsbergs	—	—	—	5 6*	—	5 6*
Glencairns	—	—	1 9*	1 9*	—	—
Glencoe Collieries	11 6	11 6	11 3*	11 0*	11 3*	11 0*
Glynn's Lydenburgs ..	10 0†	—	10 0†	—	10 0†	—
Government Areas.. ..	77 0*	77 6	77 3*	77 3*	72 0*	77 3*
Klerksdorp Props... ..	2 3*	2 3*	2 3*	2 3*	2 3*	—
Knight Centrals	3 3*	3 3*	3 3*	3 3*	3 3*	3 3*
Knights Deeps	12 9*	13 0	12 9*	12 9*	12 9*	12 9*
Lace Props.	8 6*	8 6*	8 6*	8 6*	8 6*	—
Leeuwpoort Tins	7 0	6 3*	6 6	6 6*	7 6	7 0
Lydenburg Farms	5 6	5 9†	5 9†	5 9†	—	5 6†
Meyer and Charltons ..	77 6*	85 0†	—	—	85 0†	—
Middelvlei Est.	1 1*	1 0*	1 6†	1 0*	—	—
Modder B.'s	27 6	27 3	26 6*	26 9*	26 9	25 6
Modder Deeps	40 0	39 6	40 3	39 9	39 9*	39 9
Modder Easts	18 3	18 0	18 3	18 3	17 9	17 6
Do. Options (4 years) ..	1 0*	1 0*	1 1	1 0*	1 0*	1 1
Natal Navigation Col. ..	32 6*	32 6*	—	32 3*	32 3*	32 0*
National Banks	£10½*	£10½*	£10½*	£11*	£11*	£11½*†
New Eland Diamonds ..	15 0	15 0*	—	15 0†	15 0*	15 0*
New Era Cons.	—	7 0	7 3†	7 1*	7 3	7 0*
New Geduld Deeps ..	1 4	—	—	1 4*	1 6†	—
New Heriots	—	9 0†	—	6 9*	9 0†	9 0†
New Kleinfonteins ..	5 6	—	—	5 0*	—	—
New Modderfonteins ..	63 9	63 6	63 6*	63 0*	64 0B	63 9
New State Areas	23 3	23 3†	—	—	—	—
Nigels	4 3*	3 6*	—	—	4 6*	—
Nourse Mines	7 9†	7 9†	7 0*	7 0	7 9†	—
Premier Preferreds ..	—	—	—	—	122 6†	120 0†
Pretoria Cements	58 0A	58 0	58 0*	57 9*	58 6A	55 3
Princess Estates	0 7*	—	—	0 7*	0 7*	0 7*
Rand Collieries	1 6†	1 6†	1 6†	—	1 6†	1 6†
Rand Nucleus	0 10*	0 9*	0 9*	0 9*	0 9*	0 9*
Randfontein Est.	12 3*	8 6*	12 3*	12 6	12 3	12 0*
Roberts Victors	4 9*	5 0*	4 9*	4 9*	4 6*	4 6*
Rooibergs	—	3 0*	3 0*	3 0*	3 0*	—
Roodepoort Uniteds ..	—	0 9†	0 9†	0 9†	0 6†	0 6*
Rouxvilles	5 0	5 0*	5 6	5 3*	5 6	5 0*
S.A. Alkali	20 6*	21 0*	20 9*	20 6*	20 9*	20 9*
Do. Options	—	4 6*	5 0*	4 6*	5 0	4 9*
S.A. Breweries	—	27 6†	27 6†	27 6†	—	27 6†
S.A. Lands	4 3*	4 3*	—	—	4 0*	4 0*
S.A. Townships	10 0*	—	10 0*	10 0	9 6*	9 6*
S. Van Ryns	5 9	5 3*	5 6	5 6	5 3	5 0
Springs Mines	32 0	31 9	32 3	32 3*	32 3	32 0*
Sub Nigels	11 0*	11 0	11 0*	11 0*	11 0	11 3*
Swaziland Tins	5 0*	5 0*	5 0*	5 0*	5 0*	5 0
Theron Diamonds	10 0*	10 0*	—	—	10 0*	—
Transvaal-Delagoa Invest.	48 0*	—	48 0*	—	—	—
Transvaal Lands	—	18 0*	—	18 3*	18 3*	18 0*
Transvaal G.M. Est. ..	10 0*	10 0*	10 9	10 0*	10 0*	10 0*
Union Corporation.. ..	16 9*	16 0*	16 0*	16 0*	16 6*	16 6*
Van Dyk	1 3*	1 3*	—	—	—	—
Van Dyks	1 3*	1 3*	—	—	1 3	—
Van Ryn Deeps	—	—	65 0	64 6*	—	63 6*
Van Ryn Estates	65 0*	65 3	—	—	64 0	—
Victory Diamonds	0 3†	0 3†	—	—	—	—
Village Deeps	7 3†	7 6†	7 3†	6 9*	—	6 6*
West Rand Cons.	—	2 0*	2 6*	—	2 0*	2 6†
Western Rand Estates ..	2 9*	2 6*	2 6*	3 0†	2 6*	3 0†
West Springs	15 3	14 6	13 9	13 6	13 9	13 9*
Do. Options	0 6*	0 8	0 9	0 6*	0 8*	0 6*
Witbank Collieries ..	45 0†	46 0†	46 0†	43 6*	46 0†	—
Wolhuters	3 9†	3 6*	3 6*	3 6*	3 6*	3 6*
Zaaiplaats Tins	3 0	3 0	2 9*	3 0	3 0	3 0*
Union 5 per cent. ..	£95¾*	£95½*	£95½*	£95½*	£95½*	£95½*
Transvaal Silver	26 6	26 0*	26 3	26 3*	25 9*	27 3*

*Buyers. †Sellers. A ex London.

Globe and Phœnix.

Some further encouraging development disclosures are reported from this property. In January on No. 14 level 6ft. were driven, averaging 121 dwts. and 48ft. at 11 dwts. These followed on 59ft. averaging 24 dwts. and 12ft. at 49 dwts. in December. Last month 38ft. on No. 15 level showed 25 dwts. and 38ft. 2 dwts., while 11ft. were sunk in values of 46 dwts. For December 59ft. showed 8 dwts. and 21ft. 32 dwts. A raise was put up last month from No. 23 level 7ft., showing 95 dwts.; in December 30ft. were driven in ore assaying 13 dwts. The cablegram does not mention the estimated ore reserves, which presumably will be announced in due course.

MINES DEPT. EXAMS., 1920.

CERTIFICATES AWARDED INSTITUTE

SURVEYOR'S CERTIFICATES—March, July and Octobe (Extra) Exams 100 %, 50 % and 66 % respectively of S.A. total

MANAGER'S CERTIFICATES.—Two last Exams (Sept., Jan.) 17 out of total 28 in S.A.

OVERSEER'S CERTIFICATES.—Two thirds of the S.A. total for year.

COAL CERTIFICATES.—Candidates being enrolled

Mining Institute (Prof. Yates),

St. James' Mansions, Eloff St.

The Marne Syndicate.

SOME ACCOUNT OF A MANICALAND ENTERPRISE.

By a Rhodesian Correspondent.

Some time ago a syndicate was formed in Umtali, called the Marne Syndicate, and it holds two blocks of claims, situated within the area of the Manicaland Mineral Concessions

The Marne Syndicate's tin claims, 230 in number, are situated on the Beira and Mashonaland Railway in Portuguese East Africa, between Doeroi Siding and the 93½ mile peg. They are in two adjoining blocks, the Umtachira block, 180 claims, having a length of 3.000 metres, with a width of 600 metres, and the Umtachira South block, 50 claims, with a length of 1.000 and a width of 500 metres.

The property lies between the Umtachira river on the north and the Muda river on the south, and numerous small tributaries of both streams have their sources on the claims. Nearly all of these carry tinstone in their sands and gravels, from traces up to as high as 18 lbs. per cubic yard. The cassiterite, which is black in colour, varies in size from fine grains up to rolled pieces fully an inch in diameter, and is accompanied by tourmaline, garnets, ilmenite, columbite and magnetite; while zircon and topaz have been found with the tinstone on an adjoining property. Between the streams and above their sources, the soil shows traces of cassiterite in the pan; and in places there are areas of payable alluvial, the largest (not as yet fully defined) being at least two acres in extent.

The country rock is gneiss, with mica schist, granulite and other granitic rocks, having a strike roughly N.W.-S.E., and dipping at a low angle to the S.W. Some dolerite dykes also occur, crossing the formation in various directions.

A number of veins of tin-bearing pegmatite and greisen have been located; and prospecting work is being carried out on these, with good results. The cassiterite, like that in the streams, varies from fine grains to large pieces well over an inch in size, and are rough and irregular in shape, no perfectly formed crystal having yet been found. A notable feature of these veins, with one exception, is that the cassiterite occurs by itself, without any of the above-mentioned minerals—tourmaline, etc. In the exception the vein carries some ilmenite with the tinstone.

It may also be interesting to note that all the pegmatite veins show traces in the pan of a very fine-grained, very heavy, yellowish mineral, which may possibly be carnotite; but it occurs in such small quantities that sufficient has not been collected to have this definitely determined.

The track of the old narrow-gauge railway traverses the property almost from end to end, and would form a ready-made and convenient road for the transport of ore to a mill site on the claims.

The country is thickly wooded there being abundance for both fuel and mining purposes. There are several varieties of hardwood trees growing on the property, and these make excellent borer-proof mining timbers, which last for many years.

During the wet season there is sufficient water in the creeks for sluicing, but this dries up about June or July. There are indications, however, that a good supply of water could be obtained from boreholes, at no great depth. This has been ascertained in the immediate neighbourhood. Also as already mentioned, the Umtachira and Muda rivers lie respectively to the north and south of the property; the one about three, and the other about six, miles distant.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

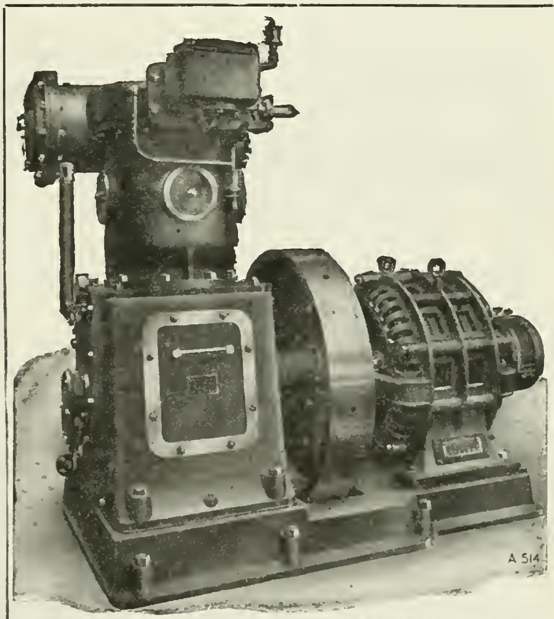
GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS TESTING PENROL—COAL POSITION—OILS AND COLOURS, &c.—BUSINESS BREVITIES.

General Position.

The week under review has been characterised by extreme dulness in mining circles, business being restricted within very narrow limits. No improvement has occurred on the Commercial Exchange, where inquiries have been comparatively few in number and of a limited nature. Business in London during the past few days has naturally been inactive pending developments at the Reparation Conference, the tense feeling being reflected here to some extent. The result of the determined action by the Allies is eagerly awaited on this side. In the meantime, notwithstanding the present untoward juncture, the undertone in London, provided no undue complications arise from the Allied countries' firm action, is not unfavourable, as is evidenced by the over-subscription there of several important loans on terms well below the rates obtaining last year, and the tension in the money market has been relieved to some extent by the Government distribution of £30,000,000 in dividends. In a conversation with a leading merchant this week it was elicited things were in a very depressed state, and owing to the financial stringency the commercial community were practically selling most of their commodities at cost or slightly under. Timber, for example, he said, was being sold at cost, for which there was no justification, apart from financial pressure, as replacement values, according to latest advices, would be higher. There was, he said, to-day undoubtedly more activity, more actual business, because the elections had had a sobering and steadying influence, but competition was so keen that although there might be a bigger turnover there was at the moment no profit in it. The German indemnity trouble was, of course, affecting business here, but only in ordinary lines, the mining business would not be affected thereby to any great extent; but until that question was settled once and for all—for which all the world was waiting—the Central European Powers would not be able to buy, and we could not reckon upon any serious trade revival out here. The Public Works Department had undoubtedly since the elections made big endeavours to relieve the present unemployment and generally help the Union out of its present difficulties. With regard to the all-important question of wages, he thought that the present frame of mind of workers was now inclined to be more reasonable, and that they would see the advisability of agreeing to a lower scale. In a canvass of important captains of industry he had come to the conclusion that within two or three months we should be in a position to build up again our commercial activities after seeing the worst.

Iron and Steel.

English mild steel is cheaper at 40s., having experienced a drop of 2s. 6d. to 5s. within the past few days. Quotations from Home generally are steadier, but a cable states that the export price of Cleveland No. 3 pig iron is 155s., and of hematite 180s., being a reduction of 40s. and 45s. respectively. Trading during the week has been rather poor, the Commercial Exchange being quite inactive. Prices on the whole have been fairly well maintained. Ruling quotations: Nuts and bolts, ⅜in. 1s. 6d. per lb., ½in. 90s., ⅝in. 75s., ¾in. 67s. 6d., ⅞in. and 1in., 62s. 6d.; brass rods, 1s. 9d. to 2s.; brass plates, 2s. 6d.; brass sheets, 2s. 6d. to 3s. per lb.; tubing, 3s. 6d. to 4s. 6d.; shafting, 8d. to 9d.; drill steel, 7½d.; hollow, 1s. 1½d.; wire nails, 50s. to 65s., according to length; shovels, 65s. to 85s.; wheelbarrows, 67s. 6d. to 72s. 6d.; picks, 4lbs. 45s., 5lbs. 55s., 6lbs. 70s., 7lbs. 75s.; pick handles, 35s.; barbed wire, 33s. 6d. to 50s. per 500 yards of 98lbs. coil; wire fencing, 30s. to 50s., according to mesh; screening, 3s. to 10s. per square yard, according to quality; Dunswart, 33s.; Union Steel Corporation, 40s. for large sizes, flats, rounds and squares, 41s. 6d. to 43s. for angles, 41s. 6d. for smaller sizes in rounds. The Corporation's exhibit at the forthcoming Agricultural Show will, it is stated, be far superior to that of last year, for which they were awarded the Society's gold medal. We shall have occasion to refer to this exhibition in our next week's issue. The Corporation has started making steel sleepers, and have already executed a large order for a sugar estate in Natal. The sleeper which they are now making



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is a much improved one and superior to the imported article. They are busier now than they have ever been before, and their prices have been well maintained.

For piping and fittings, of which good stocks are on hand, inquiries have been fairly good of late at prices ranging about as follows: One inch galvanised iron, new, about 1s. 4d a foot; 1¼in. black, new, about 2s. a foot; second-band, 1½in. and 2in., 1s. 6d. a foot; 3in., 3s.; 4in., 3s. 6d.; 5in, 4s.; 6in., 7s.; 9in., about 8s. 6d.; 10in., 10s.; 12in., 11s. d. a foot There appears to be every prospect of the metal and piping business picking up soon. Baling wire is in good demand at prices ranging from 50s. per coil, 16 gauge

One thousand five hundred employees have been thrown idle by the Australian Government's decision to close down the Chillagoe Smelting Works owing to the fall in the price of metals

The Liendand Bridge Engineering Co., Darlington, has secured the contract for the supply of steelwork for 40 road bridges from the Public Works Department, Pretoria.

Timber and Building Materials.

The prospects in the building trade are not too rosy at the moment owing to the ever-present question of the high cost of wages, which is causing the holding up of some fairly big contracts until a lower level has been established. Wages must come down, and, in the opinion of merchants, operatives will see the advisability of falling into line with the present world-wide cut in same. Prices of both timber and iron have an easier tendency. 3 x 9 deals are 1s. 6d., to 1s. 9d.; scantlings, 1s. 5d. to 1s. 7d.; floorings, 10d.; ceilings, 7d.; beaver or wall board, 5¼d. to 5½d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d. a cube; corrugated iron, 10d. to 1s. There is a good demand for buildings in town, but masters are releasing a number of men every day, preferring to wait for lower costs.

Furniture timber is without much demand, but prices, with a few exceptions, are fairly firm. Japanese oak is selling at 1s 11d. per square foot; Burmah oak, 21s. to 22s. 6d; American oak, 1s 9d. to 1s. 10d.; 1in. boards, 25s. per cubic foot; American black walnut, 1s. 10d. to 1s. 10½d.; West African mahogany, 2s. 1d. to 2s. 3d. per square foot, according to quality. Bricks, pressed and wire cuts, are ranging from 60s. to 75s. per 1,000, with, however, lower quotations for firm orders; damp course and roofing, 1 ply 40s., 2 ply 52s. 6d., 3-ply 65s.; cement, 11s. 6d.; white lime, 7s.; blue lime, 4s. 6d. per bag.

Business continues satisfactory in the second-hand iron and timber yards: materials continue to arrive slowly. Iron (second-hand) is being sold at 8d. and timber at 1s. 4d.

Electrical Goods.

Business still continues brisk in this section, and orders are coming in from all parts of the Union in a very satisfactory manner. This influx of orders from outside is very welcome to dealers in view of the present slackening off in the building trade locally. Prices are firm, and the tendency is in the direction of higher levels generally. The Continent, Germany especially, is gradually increasing prices, every incoming consignment of electrical wares bearing a higher cost than the previous shipment. The rather acute shortage of half-watt lamps has only been partially relieved by the receipt recently of a few gross. Dealers, however, are advised of the despatch of large supplies, which are, they understand, already at the coast. Complaints are rife of the great delay which attends transit owing to the shortage of rolling stock, which, it is maintained, might with advanage be doubled. Complaints are also common of serious damage to goods en route from the coast to Johannesburg; this, although covered by insurance, causes much unnecessary waste of time, a lot of worry, and of course loss on sales.

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Coal Position, Local and Oversea.

The dispute over the price of coal between the Administration and the Natal colliery owners was adjusted last week. The settlement arrived at brings the price of Natal coal, as compared with Cape coal, 3s. or 4s. a ton cheaper, and will probably stop the diversion of vessels from Durban to the Cape for bunker coal.

Penrol Spirit.

The Penrol spirit test tour, to which we referred a fortnight ago, has been completed, and Mr. Robbins-Browne reports that everything went off very satisfactorily, the spirit giving unfailing power and performance. More will be heard of this substitute spirit in the near future.

The Imperial Mineral Resources Bureau reports that gold mining throughout the world is being very seriously affected by the uninterrupted increase of all-round costs. Had it not been for the relief afforded in 1919 to gold producers within the Empire by the abnormal rates of exchange many mines would have had to cease operations.

In Lighter Vein.

A FEW NON-SERIOUS THOUGHTS ON CURRENT EVENTS, WRITTEN WITHOUT PREJUDICE.

The local cable service continues to bewilder us. On Friday evening we were informed that the cotton trade had gone to pieces, and that half a million operatives were thrown out of work. But on Monday our daily news sheet stated that the textile trade was booming. What extraordinary powers of recuperation this industry must have!

* * *

Moreover, we observe that whilst the latest London market and metal news contained in our local paper of March 10th bears the date of March 5th, there is room on the cable page for a message of March 6th which concerns the financial troubles of Mr. Hayday, a British Labour member whose eighteenth child has just been born, and who has only £700 a year. We are sorry for Mr. Hayday, but information as to latest metal and market prices is of much more interest to us than the financial embarrassments of the Labour member for Nottingham West, who apparently is still in the heyday of his prime.

* * *

We are able to say that there is no truth in the rumour that the German Government has cabled to a leading Rand magnate now on a visit to Johannesburg, and has asked him if he can arrange to lend Germany £7,500,000,000 for a week or two.

* * *

This year's Mining Exhibition is an exceedingly interesting and creditable affair, but a few non-technical visitors have complained of a certain dulness in the exhibits. These visitors should remember that this is a technical exhibition, and not a Kennel Club show. But perhaps the C.M. and M. Society might think it worth while to introduce a popular section, which would appeal to the man in the street, into next year's exhibition. Exhibits on the lines mentioned hereunder might attract the non-technical class of visitor:—(a) Painting (in oils) of the Knights Deep mill in flames, to be presented by satisfied shareholders; (b) photograph of a shift boss trying to say "Katathermometer" at a depth of 6,000 feet; (c) bust of (we nearly wrote "by") a broker.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of February:—Central Mines: Tons crushed, 11,800, yielding 3,391 fine ozs. Elandsdrift Mine: Tons crushed, 1,350, yielding 915 fine ozs. Vaalhoek Mine: Tons crushed, 1,685, yielding 628 fine ozs. Estimated value of month's output, £26,129; estimated profit for month, £3,405.

Note.—The month's results are based on a value of gold of £5 2s. 9d. per fine oz.

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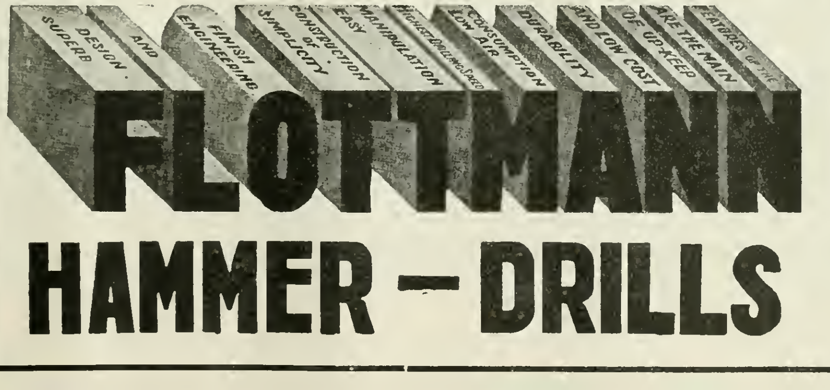

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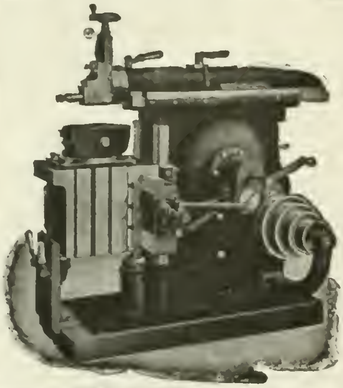

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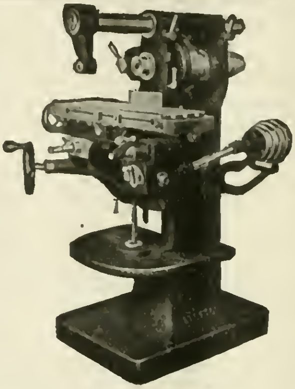

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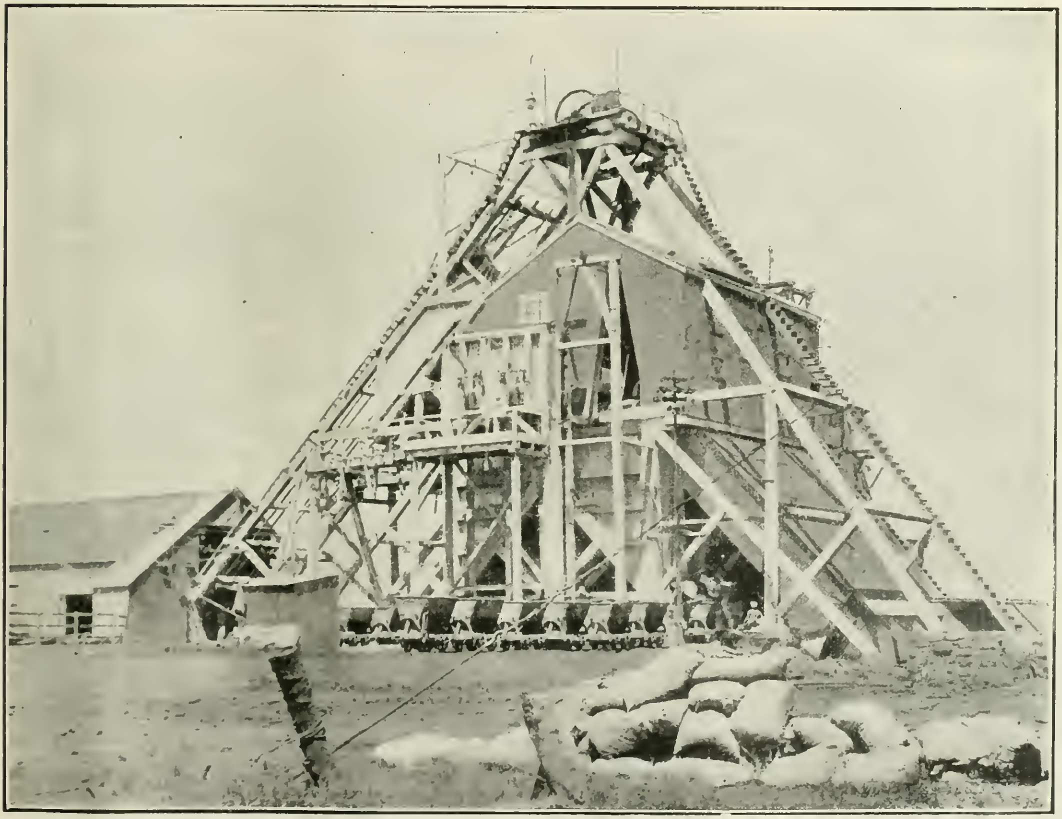
Established 1891.

VOL. XXXI., PART I.] JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 19, 1921 [No. 1538

A FAMOUS OLD SHAFT.

Various articles in this thirtieth anniversary number of the "Mining Journal" deal with mining and metallurgical practice in the early days of the Rand when the Crown Reef was one of the leading producers of these fields.



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Affairs of the Modderfontein East.

DEPRECIATION OF THE STOCK—THE "JOURNAL" SEEKS AN INTERVIEW WITH THE CHAIRMAN—NO OFFICIAL STATEMENT AVAILABLE AT THE MOMENT—VARIOUS RUMOURS—POSITION OF THE DEBENTURE HOLDERS—THE FOLLY OF OPTIONS—A GENERAL MISTAKE OF RECENT FLOTATIONS—GUARANTORS SADDLED WITH 160,000 OF THE NEW SHARES—THE MINING TOPIC OF THE DAY.

"I regret that I am unable to make any statement regarding the present position and future of the Modderfontein East at present," said Mr. Max Honnet, Chairman of the Company, to the Editor of this Journal on Wednesday. "I can only tell you," said Mr. Honnet, "that the affairs of the company are engaging the close attention of the Board, and that an official statement will be made when the directors are in a position to do so."

The sensational fall in the price of Modderfontein East shares down to 11s. 6d. and depreciation in the debentures, which are redeemable on July 31 at £105 and carry interest at 6½ per cent. to £97, has been the leading topic of conversation in mining circles during the past week.

The heavy fall in the price of this stock, and more particularly the decline in the debentures, which would appear to have a minimum value of £108¼ on July 31st next, has naturally enough created feelings of anxiety and alarm amongst a large number of holders, who desire to know what is happening in regard to this company, the scrip of which is very largely held in South Africa.

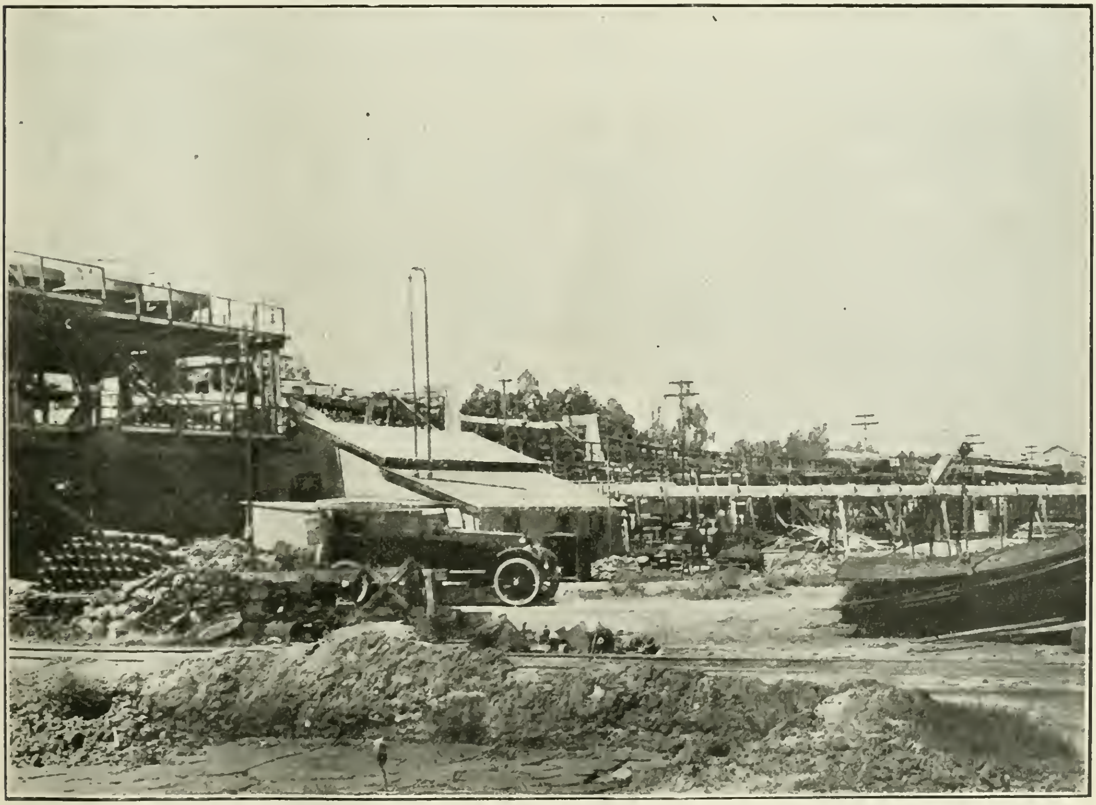
An Interview with the Chairman.

There is probably no other Far East Rand venture in which the local public are more heavily involved than in this, and because innumerable enquiries are being made by share, debenture and option holders as to the financial position of the company and the prospects of the mine, the Editor of this Journal had a brief interview with Mr. Max Honnet, the chairman of the company, and the statement made by him is given above.

Mr. Honnet has very naturally been bombarded with enquiries during the past few days; we, too, have had a considerable portion of our time taken up in giving such information as we possess to holders of shares, options and debentures in this, the latest of the Corner House flotations.

It is a pity that the Board is not in a position to make an announcement at the present time, for it is generally felt that an official statement is called for, if only to contradict some of the various rumours which are in circulation at the moment.

Mr. Honnet's reply to our question tells one nothing at all, and in answer to our query as to the latest develop-



The Simmer Deep-Jupiter plant, recently acquired by the Modderfontein East.

ment values at the mine he said that he regretted he was unable to make any remark at all.

The Recent Share Issue.

The only thing which we managed to elicit from the Chairman was that of the 183,706 shares offered to shareholders at par on December 28th and which were underwritten by the Central Mining and Investment Corporation for a commission of 5 per cent. on the total number of shares offered, the guarantors were saddled with about 160,000 of the issue. In other words, the general public only took up somewhere around 20,000 shares. This poor response fairly accurately represents the man in the street's estimate of the value of a stock which 18 months ago was the most popular speculative counter on the Rand, and if the rumours which are now current as to a recent falling off in development values in two important sections of the property and in regard to the financial embarrassment of the company are not contradicted, it is safe to say that the public estimate of Modderfontein East, Ltd., will speedily witness a further marked depreciation.

Current Rumours.

Other reports in circulation are that the company is postponing the transportation of the recently-acquired Simmer Deep-Jupiter plant and its re-erection on the Modder East (estimated to cost about two hundred thousand pounds) in order to conserve the finances of the company perhaps with a view to redeeming a portion at any rate of the debenture issue of £410,845, that reconstruction is inevitable (perhaps on a basis of one new share for two old shares), and that the eventual fate of the Modder East will be absorption of its best area by a company owing adjacent ground. How much truth there is in these assertions we are unable to say; we can only look to the Board for confirmation or denial of these and many other reports which are gaining no small amount of credence.

Question of Development.

The Chairman, however, regretted on Wednesday that no statement could be made at the moment of our interview, and therefore the public and ourselves are quite in the dark as to what is going to happen to this huge proposition with its capital of nearly a million and a quarter and large ore reserves, its debenture debt of over four hundred thousand pounds, its leased mill at the Apex, and its huge reduction plant at Germiston.

An Obscure Situation.

From all we can gather the public and ourselves are not the only ones in the dark as to the future of the Modder East. It would seem that the Controlling House itself is in a quandary over its latest baby. We have reason to believe that for some little time past the cleverest legal and financial brains in Johannesburg have been busily engaged in an endeavour to find a way out of the difficulties with which this company is beset. And in the face of the Chairman's inability to make a statement on Wednesday it would seem that a satisfactory solution has not yet been found.

Unfortunate Methods of Finance.

"It is unfortunate for the Modder East that the method of financing this company has been hampered by the prevailing depression," remarked the Chairman to us on Wednesday. "The scheme adopted was suited to improving conditions, and had the options been exercised everything would probably have come all right." This is no doubt true to a large degree, although even if all the Red and Blue certificate holders had exercised their rights we doubt if the full financial requirements of the company would have been met.

It is, as we have often said before, a distinct feather in the cap of the Corner House that they should have been able to bring this large property to the producing stage during the difficult period of the War and the War's aftermath, but the methods employed by the controlling corporation in raising money for the exploitation of the property and latterly for the purchase and erection of the Simmer Deep-Jupiter plant have not been free from criticism, particularly by the unfortunate holders of option certificates.

The Folly of Options.

Financing by means of options has recently been a feature of South African mining concerns. We do not single out the Corner House for blame in this respect The system is a bad one and it has been practised during the last two or three years by nearly every controlling house on the Rand with the exception of the Consolidated Gold Fields, which has not indulged in this precarious method of raising funds, probably because it has nothing sufficiently attractive to float an option issue on.

The Consolidated Mines Selection Company have had option issues in respect of Springs, West Springs and Daggafontein, and the Barnato Group introduced the option element into the reconstruction of Frank Smiths. There are Geduld Options, and the Albu Group in floating Transvaal Silvers created option certificates in proportion to the share issue. The system has been adopted in numerous other flotations and reconstructions in Alkalis, Pretoria Silver Leads and Sakalavas, for example. In the cases of Springs and the Transvaal Silver and Base Metals the options were exercised, but in practically every other instance the option issue has been attended by unsatisfactory features. In any case, this method of financing a highly speculative concern like a mine is bad business.

Dangerous Speculations.

It is comparable with a man without means contracting to erect a mansion in Parktown in the expectation of the death of a rich grandmother in two years' time. If the grandparent elects to live a little longer the result may well be disastrous to the speculator.

The Controlling Houses have apparently been gambling on bull markets and a period of financial splendour. But the times are against them, and it is not too much to say that a large proportion of the option issues of recent years is not worth the paper it is written on.

Financing of options is bad business from the point of view of the companies concerned. It savours of bucket shop finance and has conduced towards damaging the good reputation of the Rand.

What Option Holders Think.

And from the point of view of the general public, that is to say of the man who has purchased at high prices the right to take up shares at a premium which decline to below par, the purchasing of options is merely a highly efficient method of losing money. We have turned for a time from a consideration of the particular case of the Modder East to a matter which has been very much in our minds for a long time past and we will now revert to the present position of that company.

Position of Debenture Holders.

The status of the debenture holders is a matter of very material moment and many people are wondering why this scrip is standing below par when it seemingly possesses a minimum cash value of £108¼ on July 31st. The context of the agreement as between company and debenture holder inscribed upon the Bond is as follows:—

The Modderfontein East, Limited (hereinafter called the "Company") will on the 31st day of July, 1921, pay to the bearer on the delivering up of this Debenture the sum of £100 (one hundred pounds) together with a premium of five pounds per centum or the bearer may, in accordance with the conditions endorsed hereon, surrender the same in exchange for one hundred shares of the Company, of the nominal value of one pound each.

The Company will, until such payment or exchange, pay interest on the said principal sum at the rate of £6½ per cent. per annum on the 31st day of January, 1920, and thereafter by half yearly payments on the 31st day of July and the 31st day of January in each year in accordance with the coupons annexed hereto.

The Debenture Holders are and will be entitled to the benefit of and be subject to the provisions contained in an Indenture dated the 25th day of September, 1919, and made between the Company of the one part and John Emrys Evans, C.M.G., and Woodthorpe Tempest Graham (as Trustees) of the other part.

This Debenture is issued subject to and with the benefit of the conditions endorsed hereon which are deemed to be part of it."

Important Clauses.

The following extracts from the legal agreements determining the conditions of issue and redemption of the bonds are of interest: -

Clause 4 provides that the company shall as and when required execute, etc., a valid first mortgage over the whole effects of the company, including principal moneys and interest owing, and all other moneys intended to be secured by the Deed, and for conferring upon them the most ample powers of sale.

Clause 6 provides that the Trustees shall on the request of one-fifth value of Debenture holders enter upon and take possession of the mortgaged premises, and may upon like request sell, etc., or convert into money the same or any part thereof.

Clause 7: If the company makes default for three months in payment of any interest, etc., the Trustees shall declare the security enforceable.

Clause 24 provides that the Debentures which have not been exchanged for shares by July 31st, 1921, in terms of bonds, shall on the surrender of same be redeemed by the Company at £105 in cash on that date

Clause 30: One-fifth value of Debentures can request the Trustees to take steps to enforce any condition of Deed. Clause 33 (Debenture Bond).

The Trustees may from time to time and at any time (if in their opinion the interests of debenture holders shall not be prejudiced thereby unless otherwise directed by an extraordinary resolution of debenture holders passed in accordance with the provisions contained in Schedule 2) waive on such terms and conditions as to them shall seem expedient any breach by the company of any of the covenants and provisions herein contained without prejudice to the rights of the Trustees in respect of any subsequent breach thereof.

Second Schedule: One-tenth value of Debentures may call a meeting of Holders of Debentures. One vote at meeting of holders or one vote for every £1 in the event of a poll. Three-fourths majority required to pass any extraordinary resolution on show of hands, or three-fourths value if a poll is demanded.

The Trustees have the power to sanction any compromise or arrangement proposed to be made between the Company and Debenture Holders.

The last clause in the second schedule would appear to confer very wide discretionary powers upon the Trustees.

Such, in brief, is the sum total of information relevant to the present position of the company which we have been able to gather.

The Company's Affairs in the Melting Pot.

The future of this proposition is obscure at the moment, but much may happen between now and the end of July, and we do not believe for a minute that the Central Mining and Investment Corporation will allow an important proposition like this to sink into the slough of utter failure. The House itself is largely involved in the venture. They are reported to hold, or recently to have held, four hundred thousand shares, and although their interest in the debentures may until recently have been "infinitesimal," it will probably be found that when the day of redemption arrives (or even before) the stable will rise to the occasion and as co-mortgagees with the public devise some satisfactory plan for carrying on.

The incidence of the gold premium, the future trend of working costs, the mine development and milling values, and the general financial situation are all factors of vast importance to the company, and there may be brighter spots in these directions than are at present discernible.

How the Corner House Stands.

The sponsors of this last big Rand flotation have done their best to make Modder East a success.

Their technical direction of the property has been good, and if at times their methods of financing the property have been open to criticism, it must be remembered that they have had to find large sums of moneys during difficult periods. We do not hold that the Central Mining and Investment Corporation are to blame, because the Modder East, although a producer and profit-earner, is apparently in the grip of financial difficulties to-day, except that the company based a vital part of its financial scheme on the chimera of option certificates. As we have already said, nearly all the other Rand groups have made similar miscalculations. Financiers, merchants, bankers, and the most astute minds of Europe and America have made similar mistakes.

General Experience.

The whole world, it seems, has been chasing financial rainbows ever since the annus mirabilis of the outbreak of war and especially so since armistice. For the time being those rainbows are enveloped in a nebulae of dark and lowering clouds.

One is not entitled to single out the Modder East for castigation. The company seems temporarily to have been caught in a vortex of unfavourable conditions which could scarcely have been anticipated, and if as a consequence of the present position of this company the fact is brought home to the Rand as a whole that financing on the expectation of options being exercised is unsound business the lesson of the Modder East will not have been learned in vain.

A Point for Share and Debenture Holders.

Stockholders in this company can at any rate rest assured that the affairs of the Modder East are being most carefully considered by some of the most able men in this town, and that if a satisfactory way out of the difficulties which seem to beset this mine can be found, the controlling house the Central Mining and Investment Corporation—which is one of the most powerful mining concerns in the world, will see to it that the share and debenture holders receive the benefit of any scheme which may be devised to put the affairs of the company on a sound basis.

A Succesful Barberton Enterprise.

The annual general meeting of the Barbrook Gold Mining Syndicate, Ltd., was recently held in Barberton. Mr. J. H. Harris, chairman of the directors, reported on the year's mining and result. The report shows the company to be in a very satisfactory position. Development is well ahead of the current recovery and the grade of the ore crushed has been good. All will join in wishing the venture a long continuance of last year's success, and to the shareholders who are almost entirely local people, many more twenty per cent. dividends. It is pleasant to find this relatively small proposition doing so well and very encouraging to those in the district who are engaged in gold mining. The report states, *inter alia:* At the commencement of the past year the ore reserves were 30,000 tons, and despite the fact that there has been a considerable shortage of native labour, considerable development work has been done and the amount of ore developed is now 70,000 tons. This is very satisfactory and places the company in a very strong position. With the present battery equipment there is thus over nine years' work in sight. 7,103 tons of ore were crushed at an average cost of 16s. 1·1d. per ton. The bullion, recovered amounted to 1,673·9 ozs., which, considering the fact that last year was the first year that the company really got into working order must be considered as extremely satisfactory. The net profit for the year is £2,749 12s. 6d., of which the sum of £1,308 18s. has been expended on mine equipment and development, thus leaving a balance of £1,440 14s. 6d. available for distribution. The directors recommend that a dividend of twenty per cent. be paid to shareholders and that the sum of £266 14s. 6d. be

* * * *

A Long Life Marine Superheater.

The superheater, by means of which the temperature of steam is raised above the level produced by the boiler itself, is a source of great economy in the use of steam. It has been applied to every modern steam-using installation on land, and it has also been largely adopted on board ship. In the latter case, however, a superheater which raises the temperature as high as is commonly done in land installations is apt to give more trouble in upkeep than the marine engineer is able to provide for readily. To meet these conditions, a British firm of engineers has introduced a new type of superheater in which a moderate degree of superheat is obtained and provision made in other directions for the long life and reliability of this accessory. This superheater can be applied to practically any existing marine boiler with natural draught, and it gives a very large measure of saving in steam while running efficiently for long periods without attention.

Economy in Costs of Gold Production.

A REPLY TO MR. WESTON—SOME NOVEL AND VALUABLE SUGGESTIONS.

Arising out of the letter contained in our last issue from Mr. E. M. Weston on the subject of the present plight of the mining industry, and containing suggestions for the remedy of the prevailing depression, we give hereunder an interesting communication from a well-known mining engineer, who prefers to sign himself " Developer of the Industry," and who takes Mr. Weston to task on certain points. Our correspondent's letter contains several remedial suggestions of an unorthodox nature. But they are worthy of careful consideration, and on several points we find ourselves in accordance with " Developer of Industry," particularly when he says that the controlling houses should leave a " little more freedom of action to their managers."

In our view the head offices should give very much more freedom of action to the man on the spot who is running the proposition.

To the Editor, *S.A. Mining and Engineering Journal.*

Dear Sir,

The letter which you print of Mr. Weston's is too vague. Let us get to facts. I ask you in your next week's issue to print an analysis of *detailed*

(1) Underground costs: (a) Mining; (b) Mechanical.

(2) Surface costs: (a) Milling and mechanical: (b) Treatment and recovery.

(3) Overhead costs.

(4) Costs of marketing the gold.

Then we can see where economies can be made *to-day*. Analysis is what we want. Personally, as regards mining, I would make one white intelligent man foreman of *one* level, giving him a contract for the provision of " dirt " for the mill. Let him have entire charge of the men he desires to employ.

Cut out shift bosses. Make the mine captain into a plain overseer—give him plenty of assistance. Work each level as you would a workshop, analysing the cost of working each stope as you would on the surface. "*Give it a job number.*" Put engineers in charge of all machinery underground. Offer substantial prizes to mine employees to suggest (direct to an independent Chamber of Mines board) methods of making economies and improvements. Introduce at once a chart system showing, as at the Robinson outcrop mine, when the costs go up, and seek the reason, and remedy the fault, as done at this mine.

Then, on the other side, I suppose that if the supply of gold was cut off altogether the price (so-called) of gold would go up from five guineas, mentioned by you, to fabulous figures. Now, as Labour and Profiteers have formed trusts to " put up " the price of *their* goods, why should not the mines say: " *You cannot have the gold unless you pay us the ' ring ' price of, say, seven or eight guineas an ounce!* " Prices of some goods might go up, but—*South Africa would benefit*. That, sir, would put a different complexion on the matter, and we should all be busy once again *in South Africa*.

" Oh! " I hear it said, " *it can't be done.*"

It *must* be done if we are going to keep the gold mine basis as the standard of value for South African industry. All the talk about getting back to the pre-War conditions and low prices is silly. Keep the prices up if you will—it's just the same in the end. What really matters to-day is the saving, *i.e.*, the balance left over after paying all charges, in order to provide fresh capital for further expansion of South Africa. It is South Africa *we* are interested in! Since 1914 we have done little else than change the process of saving capital, and we are now suffering. We want more production, not necessarily lowest price of production. The object of all law, to which all decent men and women subscribe, is to live well, to save capital for future progress, and to see that there is no " loafing " of one section to the detriment of this great ideal. Advance! South Africa!! That is the right ideal.

If the controlling houses would leave a little more freedom of action to their managers, make two or three returns of statistics a year instead of twelve, there would be some time to think out some economies, but as it is, things are like an infernal Government Department—where the chief of the department is " snowed up " with what is called departmental work, and has no time for the initiation of efficiency stunts.

The curse of the gold industry is as with all Government Departments—there is too much of the policeman attitude and too little of the " leader " attitude. The controllers should " teach," not " preach " only, with " punishment " as incentive. The men who go underground to get out the gold ore are all good fellows—God bless 'em!—but when they are treated as they are, you don't get the best out of them. This applies to managers as well as men.

You, sir, have done so much to voice the call for " greater efficiency," " increased production," " better results," that I feel sure you will not be led to join in the " parrot cry " for economy, without also trying to find out in which *exact* direction economies can be made.

As for calling in poor old General Smuts to preside over a meeting—what good could he do? He is a lawyer, not a mining man! Let us have it thrashed out right here in Johannesburg amongst ourselves what is the right thing to do, then go to him and say, " Help us." Have something definite!

All the shouting in the world won't bring capital into South Africa whilst we encourage the waste of capital as we do.

Inefficiency from top to bottom may possibly exist. We have got the will to economise, but apparently we are set against economising " capital," *i.e.*, " effective credit." You know all about the Rand industry—can you tell us why we complacently waste capital?—Yours, etc.,

" DEVELOPER OF INDUSTRY."

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.
SURVEYOR'S CERTIFICATES — March, July and October (Extra) Exams 100 %, 50 % and 66 % respectively of S.A. total.
MANAGER'S CERTIFICATES. — Two last Exams (Sept., Jan) 17 out of total 28 in S.A
OVERSEER'S CERTIFICATES.—Two thirds of the S.A. total for year
COAL CERTIFICATES.—Candidates being enrolled
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

New West Rand Flotations.

REVIVAL OF THE FRENCH RAND AND GREY'S MYNPACHT.

There have recently been one or two important developments on the West Rand in the vicinity of Luipaardsvlei and Witpoortje.

We learn that during the last few weeks a company styled the Goleonda Gold Mines with a capital of £40,000, has been formed to develop and equip the old Grey's Mynpacht Mine, whilst another proposition is in course of flotation with a capital of £150,000, to acquire and work claims formerly owned by the old French Rand Company.

Several well-known Capetown and Johannesburg people are concerned in these flotations.

The Grey's Mynpacht Mine, now styled the Goleonda Gold Mine, has been reported on by Mr. B. Schlesinger. We understand that in the course of one of his reports on this property, Mr. Schlesinger estimates a total immediate profit in sight of £13,830, and a total probable profit of £60,000 on a basis of low working costs ranging from 13s. 6d. to 17s. 6d. for open workings and Reefs, and of 7s. for the dumps.

The "Goleonda" property is situated at Witpoortje, on the West Rand, and consists roughly of 154 claims.

Outside of and near to the eastern boundary the famous "Witpoortje Break" separates this part of the country from the mines of the Roodepoort district, and its western boundary adjoins the claims of the old French Rand Gold Mining Companies.

About one hundred yards from the northern boundary the auriferous conglomorates of the Main Reef series penetrate the surface of the Grey's Mynpacht (or are disclosed by prospecting works), in a line striking west north-west to east south-east, and traceable for a distance of 1,200 feet on the western section of the property. The eastern section beginning from a valley running north and south, which almost bisects the Mynpacht, is covered with surface soil, and it will be the task of future prospecting to determine the continuance of the Reefs through this portion of the claims.

As far as can be judged from surface indications, there is no reason why the measures should not extend east right up to the main "Witpoortje Break," although, being so near to the latter, they will probably prove to be twisted and broken up.

The most important conglomerates existing on the Mynpacht are a six foot reef locally termed "Main Reef," which is encased in sandstone walls. Its surface dip 50 deg. south, and it forms the most northern or bottom reef attached on the property. 82 feet south of the foot of the Main Reef "The Old and New South Reefs" are encountered, and 15 feet further across an auriferous hanging wall stringer, the whole of the series measuring 97 feet horizontally, or 76 feet across the strata.

About 1,000 feet south of the Main Reef there is an outcrop of a 4 foot conglomerate, strongly resembling the Battery Reef of the West Rand.

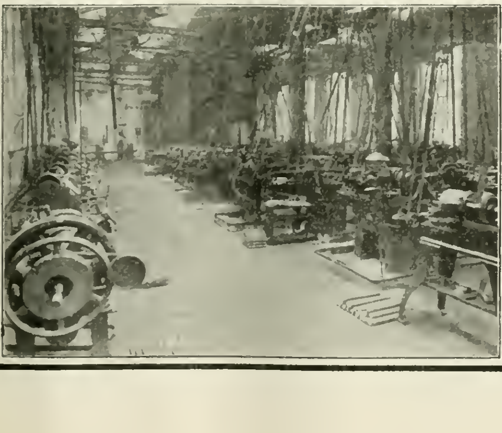
In the early days of mining on the Rand, a shaft was sunk on the Grey's Mynpacht, said to be 800 feet deep, and to have partially pierced a longitudinal fault, which runs through the property, and very likely terminates at the "Witpoortje Break." It is also reported that four development drives were put in, and a small amount of stoping done.

Within the last few months Mr. J. Simpson on behalf of himself and others has carried out a good deal of surface trench work, and winzing on the Main Reef series. He has also driven an adit near the foot of the valley beforementioned, and intersected the Main Reef about 100 feet in, exposing the Reef for a distance of 40 feet up to the reverse fault, which throws the measures back roughly 60 feet into the foot, and is picked up by the adit 140 feet further in. From this point, which is connected with the surface by a winze, the adit takes the character of a drive, running as it does along the Main Reef.

Cross-cutting south the "Old" and "New" South Reefs were opened up, and driven on for a distance of approximately 100 feet. Altogether approximately 600 feet of new development work was accomplished.

The Unemployment Problem.

Despite all warnings to the contrary, there are signs that the unemployed from other centres are drifting to the Rand in search of work. From the diamond mines and the alluvial diggings, from the tin mines and from every point at which the white labour field of employment has contracted, men are arriving in Johannesburg in the hope that there may be "something doing" here. So many mines have recently closed down on the Rand that the local unemployed constitute a problem sufficiently serious of itself without being intensified from other and outside quarters. It would be well, perhaps, if the Mayor of Johannesburg were to send a reminder to the Mayor of Kimberley and other affected centres setting out the true state of affairs and urging out-of-works to give the Rand a wide berth. Unless something of this sort is done the trouble is bound to go on increasing, with results that must detrimentally affect every section on the Rand.



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SHEFFIELD AND JOHANNESBURG.

Latest Results from the African Platinum Mines.

ACTIVE PROSPECTING AND EXPLORATORY WORK—"THE TRUE SOURCE OF THE PLATINUM"—SOME REMARKABLE ASSAYS—RICHER THAN THE RUSSIAN DEPOSITS.

The latest reports from the much-discussed properties of the African Platinum Mines continue to be most encouraging. Mr. J. R. Williams, in a report dated March 12, writes:

"During the period covered by the last two months a large amount of prospecting and exploration work has been done on your various areas. Some hundreds of samples have been taken and submitted to assay, obviously with very varying results, as we have continued the policy of sampling everything likely and unlikely.

Red Hill.

"At this point a large amount of cross-cutting and prospecting shaft sinking has been done, the cuttings being about 6 feet to 8 feet in depth, and the shafts varying from 20 feet to 40 feet. This has given us an opportunity of very thoroughly sampling and estimating the value of this semi-alluvial deposit. Unfortunately not having the figures before me I cannot give you the average value, but would place it at about 12 grains per ton. This you will find is considerably lower than the independent sampling and assaying of Mr. A. Heymann, but the discrepancy is easily accounted for by the fact that my sampling includes many of no value when we were getting to the end of the pay deposits.

Horse Shoe.

"A fair amount of trenching and cross-cutting has been done at this point with very varying results. Whilst we frequently get mere traces, the next sample taken at the same place has been found to be very rich. The last careful and systematic sampling gave an average of just 6 dwts. of platinum per ton.

Point "A."

"The last set of samples taken here gave an average of just over 12 dwts. of platinum per ton. All this exploration work and sampling have brought us to what I consider to be the true source of the platinum.

The True Source.

"This consists of a huge decomposed dyke of igneous origin, and when first discovered in a water cutting a rough sample taken across about 40 feet gave 2 dwts. of platinum per ton. This was re-sampled on two separate occasions, once by your managing director and once by myself. The average of these samples showed 2·25 dwts. Since then we have started at three points to crosscut through this dyke, the distance between the northern and southern cutting being about 1,000 yards. Whilst this dyke certainly shows local enrichments, some samples giving over a width of 11 feet as high as 10 dwts. and upwards per ton, my last average of these cuttings gave just over 5 dwts. of platinum per ton. Since then a large amount of work has been done, and as would appear from Mr. Heymann's results, the values have been more than maintained. Two of these cuttings are 80 feet across the dyke, but are not yet through the dyke, whereas the southern cutting gives a total width of just 92 feet.

"This dyke, or reef, can be easily traced for a distance of over 25 miles, and whilst the discovery is too new to have given us the time to take careful and perfect samples, a large amount of rough sampling has been done over many points over the whole length. In no case has a sample been taken that does not carry platinum. As through the contour of the country this reef can be seen at altitudes varying by not less than 1,750 feet, it is obvious that with this great width, there are many millions of tons in sight.

"I have also to report the discovery of a second dyke running more or less parallel with the first dyke. The results of the first sampling have been so enormously rich, and as no real work has as yet been done, I will simply state that this reef is so far so very rich in platinum that if the value was divided by four, it would still on its great width be of a value beyond the dreams of avarice, and I cannot too strongly recommend that a large amount of systematic prospecting work be at once undertaken on both of these large reefs. I would draw your attention to the fact that owing to the large amount of washaways there have been through river and other causes, true mining such as shaft sinking, etc., will not be required for a great number of years, as all the rock required to supply any number of recovery plants can be taken out by open quarrying, thus reducing the working costs to a very low figure. This, coupled with the fact that you have plenty of coal; water power and mining timber on the property, in addition to abundance of native labour—this latter being comparatively cheap, will enable all of your work to be accomplished at a very small cost per ton. Enclosed please find report by Mr. Alexander Heymann, giving detailed results of independent sampling, and assaying which you will find fully confirms my remarks."

Dr. Heymann's Report.

Dr. Heymann writes: "Acting under instructions, I again visited your platinum-bearing properties, and herewith submit report of my investigations there. I found that since my first visit a considerable amount of prospecting has been done. On Red Hill a number of new cuttings have been opened and shafts sunk. The depth of these shafts mostly varies from 15 ft. to 20 ft., and that of the cuttings from 6 ft. to approximately 20 ft. My samples were taken from these cuttings and shafts, mostly starting at the surface and continuing throughout the depth. Ten samples from Red Hill were assayed in my presence, at your laboratory on your properties, the assay results of same having been as follows: 1·00 dwts., 0·50; 0·90 dwts., 0·80; 0·90 dwts., trace; 2·40 dwts., trace; 0·50 dwts., trace; average, 16·8 grains. Check assays done in my laboratory gave me the following results: 1·80 dwts.; 1·30 dwts.; 0·70 dwts. Here I would like to remind you again of a fact stated in my first report: 'An alluvial platinum-bearing proposition, carrying an average of 3 grains per ton (24 grains = 1 dwt.) has been proved a good and payable concern.'

"As I stated in my last report, this alluvial platinum-bearing body (Red Hill) could be worked very easily and economically, and I strongly recommend that you erect a recovery plant, plans of which I have submitted to you. The cost of such a plant is very moderate. In close proximity to the openings there is a stream, continually running, which could supply a sufficient amount of water for the working of your plant, and this would be a convenient position to erect same.

"*Dykes.*—I have now to discuss the most important phase of my investigations, that concerning two platinum-bearing dykes, which were recently discovered to run through your properties. These dykes can be traced for many miles, separated at one portion of your properties by a distance of about six miles, but gradually converging.

"*Dyke* 1.—This dyke has an approximate width of 35 ft., and I have traced it for about ten miles, from the top of the hill at Property A, to the Horseshoe. My first samples I took on the above-mentioned hill, where I found three openings—one, the eastern, being on the dyke, and the others, the central and western, being more to the side of the dyke.

"*Results.*—Eastern opening: (1) Surface 22 in. down, 10·7 dwts.; (2) crosscut across bottom, 14·2 dwts. Central opening: (1) Nil; (2) nil. Western opening: (1) Nil. The last three results are to be explained, however, by the fact that the Central and Western openings are not on the dyke itself, although I would not be surprised it at a greater depth some values could be obtained from them. About a mile away from these openings I sampled a six foot shaft, which had been sunk into the decomposed dyke, the assay results of samples being as follows: First 2 ft. from surface, trace; second 2 ft. from surface, 0·90 dwts.; third 2 ft. from surface, 1·10 dwts.; crosscut across bottom, 11·10 dwts. Two miles further on (in Property B) on the slopes of a hill is the first of three cuttings on the dyke, known as the North cutting; half a mile from this, halfway up the opposite hill, is the Centre cutting; and on the summit of the hill, the South cutting.

"*Results.*—North cutting. Representative sample of South face, 3 dwts. In the dip between these two hills I took two samples, which gave the following results: 1·10 dwts. (surface sample); 10·20 dwts. (2 ft. below). Centre cutting: West face, 2 dwts.; south face, 6·30 dwts.; north face, 2·8 dwts. Here a surface sample was also taken on the west side of the dyke at contact between the dyke material and the foreign rock. This gave an assay result of 4·6 dwts.

"*Dyke* 2.—The approximate width of this dyke is 55 ft., and I have followed it up for about 11 miles from Property C, to the south side of Horseshoe. At the first-mentioned place I took six samples, representing the total width of the dyke.

"*Results.*—Contact of dyke with foreign rock, 18·6 dwts.; first 10 ft., 38·10 dwts.; second 10 ft., 15·30 dwts.; third 10 ft., 27·20 dwts.; fourth 10 ft., 8·50 dwts.; fifth 10 ft., 11·70 dwts. About 250 feet lower, in the valley, and approximately a mile from the above-mentioned place, the dyke was again sampled, assayed result of which was 25·30 dwts.

"In conclusion, I would like to state that after my first visit to your properties I was highly satisfied with the result of my investigations, and on further prospecting being completed expected very good results, but those obtained from my second investigation far surpass my expectations. I must emphasise the vastness of the proposition you have before you in working your properties for platinum recovery. You must bear in mind that, previous to this, no dykes carrying so richly in platinum had been found in the world. It is true that in parts of America small reefs are found containing platinum and nickel, but the content of the platinum is hardly sufficient to warrant working for obtaining that metal. However, you need only glance at assay results of samples taken from your dykes to realise how wonderfully rich they are in platinum content. Even the alluvial deposits alone would be rich enough for working for platinum, so that I feel that I can unhesitatingly state that, having these alluvials and dykes, your properties are on a far higher level than the Russian platinum fields, which until the present have been reckoned as the greatest in the world. Gentlemen, I am convinced that your proposition has a wonderful future."

Pretoria Silver Lead.

The report for February by Mr. Oliver King, consulting engineer, on this property is as under:

Mine Development.—The equipment of No. 1 shaft is being pushed on, so that the work of shaft sinking and mine development may be started at the earliest possible moment.

Sinking in the No. 1 east and No. 1 west winzes has been stopped until steam power is available to deal with the draining of the winzes. The sinking of the main shaft will also assist in keeping the winzes clear of water.

Buildings.—The block of single quarters with dining-room and kitchen is now in occupation. The hoisting engine and compressor house is now erected and should be completed within the next week.

Office and store building is now erected and is being used partly for the storage of shop tools, cement, lime, etc. The manager's house has been started and good progress made.

Shaft Equipment.—Practically all the heavy plant is now on the ground and it may be considered that all necessary machinery and plant prior to the installation of the reduction plant has now been provided.

The three 10-ton boiler shells are now in position and will soon be ready for inspection prior to bricking in. The boiler house will be completed in a few days. The main engine house is also nearly completed, and concrete foundations for the winding engine, compressor, shop engine and machine tools are in progress, and as soon as they are completed the necessary pithead pedestals for collar set and headgear will be put in. Given favourable conditions, it should be possible to commence shaft sinking in about six weeks from now, and to carry on this work and later mine development without interruption.

Generally the month's progress has been much better than could have been anticipated at this period of the wet season, and the work has been brought to a stage so that from now on no serious delays may be feared in the completion of the equipment and the starting up of the major mining operations.

ZAAIPLAATS TIN.

The results of operations at Zaaiplaats tin for the month of February, 1921, are as follows: Mill ran, 10 days; concentrates won, 13 tons; capital expenditure, nil; estimated loss for the month, £1,813 11s.

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"Death to Dust."

DR. ORENSTEIN'S LECTURE.

Dr Orenstein was as usual interesting and informative in his lecture on "Miners' Phthisis" on Saturday night at the South African Technical Societies' Club. Sir Lionel Phillips presided. Dr Orenstein gave a general resume of his subject and his points were afterwards driven home in a realistic manner by way of a cinema film showing mining operations underground The konimeter, a dust-detecting instrument, showed dust particles 1-10,000th of an inch in size by the light of 200,000 candle power Silicosis, or miners' phthisis, the lecturer explained, was primarily caused by the dust created by drilling or hammering siliceous rock "You must remember one thing," he told his many listeners, "no fine siliceous dust, no silicosis." Theoretically speaking, there was no reason whatsoever why silicosis should not be entirely unknown. The prevention of the rising of dust and the improvement of conditions of working should result, again theoretically speaking, in no miner's phthisis But 100 per cent. efficiency was the dream of the engineer Perfection could never be achieved. The right aim was to eliminate silicosis, but this could not be done, owing to neglect and insufficient intelligence. "We realise," he said, "that no one thing is perfect, but by building up a series of defences we could make it difficult for this deleterious thing to reach us." The more nearly perfect was the watering appliance and the ventilation, the more nearly would be the approach of their aim for the total eradication of phthisis from the Rand. "It is said to be axiomatic," he continued, "that practically every European in his childhood has a certain amount of tuberculosis." Silicosis ingrafted on tuberculosis was not uncommon, and in such cases life became very much shortened. The great thing in the prevention of tuberculosis forming in connection with silicosis was that the moment a miner got silicosis he should clear out and live an outdoor life. If such a man went to work in a healthy outdoor occupation, well within the capacity of his heart and lungs, he stood a reasonable chance of preventing the really dangerous thing tuberculosis. After impressing on his audience that it was unquestionably in the hands of the individual to create a large or a minimum quantity of dust, Dr. Orenstein showed by slides the amount of dust with and without water in the use of various drills. What they had to aim at was to keep the dust down to a minimum, by ventilation to remove as much of it as possible, and at the same time remove the bad air and obtain good atmospheric conditions, and to spend as much time as possible outdoors. Dr. Orenstein then spoke of the two institutions for the treatment of silicosis, Springkell and Wedge Farm. These institutions served a useful purpose, he said, but people did not seek them soon enough. "In the early stages," he said, "consumption is curable in a large number of cases; in the later stages it is incurable. In the early stages silicosis is curable as far as saving life is concerned. Six months' treatment in the early stages may mean years of life afterwards. It seems to me a terrible pity that these institutions that serve so useful a purpose are not more utilised." If one were so unfortunate as to get silicosis, he added, the sooner the treatment was made the better. If left too late it was no use at all. The final idea of a man should not be to go on some unregistered mine in Rhodesia or elsewhere, but as far as possible to lead an outdoor life. He should take advantage of the Government scheme and get to work on the land. In this connection a film of one of these settlements, supporting 58 settlers with over 300 dependents, was shown. Sir Lionel Phillips moved a vote of thanks to Dr. Orenstein.

Letters to the Editor.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—We are requested to draw your attention to certain inaccuracies in your article, "February Operations on the Rand," page 811 of your issue of the 12th inst., which may lead to misconception.

In the first place the estimated working revenue of the Witwatersrand Deep, Ltd., for December was based at £5 15s. per fine oz., and not £5 19s. as stated in the article.

Further as the figures for this mine are shown in your article apparently for the purposes of comparison, it should be stated that from the profit of £9,188 for December should be deducted capital expenditure amounting to £1,519, and from the profit of £1,621 for the month of January should be deducted capital expenditure of £1,080. The surplus of £6,413 for the month of February as shown in your article is the amount after deducting the capital expenditure

We will be glad if you will draw attention to these alterations in your next issue.—Yours, etc.,

L. Charlston Goch & Co.,
Secretaries:
M. EDMUND.

Johannesburg,
12th March, 1921.

To the Editor, *S.A. Mining and Engineering Journal.*

Reinforced Concrete Pipes vs. Cast Iron.

Sir,—I shall be much obliged if you will publish in Saturday's issue of the *S.A. Mining Journal* the following article. I am anxious to remove any wrong impression which might be caused through the reading of the article published in the *S.A. Engineer and Electrical Review*, February issue:

"Reinforced Concrete Pipes v. Cast Iron.

"In the current issue of the *S.A. Engineer and Electrical Review* there is an article under the above heading which purports to show that concrete is an unsuitable material to use in the manufacture of pipes. We wish to make it quite clear that this article does not refer to concrete pipes when made on the 'Hume' centrifugal principle. Admittedly concrete pipes made by the older methods are not so dense as concrete pipes when made by a centrifugal process. The article published in our contemporary is extracted from advertising matter published by a firm of exporters of cast iron pipes, namely, *Birch Quarterly* of October, 1920. The article contains extracts taken from various papers and reports on concrete pipes; but the extracts are taken in such a manner as to convey a totally different impression to that intended by the authors. A similar article, published in the form of a two-page pamphlet, and headed 'Extract from *Indian Engineering*,' is being circulated to Municipal engineers, water engineers, etc., throughout the Union by some anonymous individual."—Yours, etc.,

The Hume Pipe Company (S.A.), Ltd.,
W. WOLSTENHOLME,
Managing Director.

Johannesburg,
17th March, 1921.

S.A. Nickel and Talc.

The directors of the S.A. Nickel and Talc, Ltd., in their prospectus issued, stated that they were making arrangements for the transport of the nickel ore to Europe for treatment. Laboratory tests which have been conducted indicate that the ore can be successfully treated locally and the profits should thereby be considerably enhanced. It is proposed to conduct a series of trial treatments of ore in bulk by two methods No. 1, crushing and concentration; No. 2, by direct smelting of the ore. The definite policy to be adopted in the future will be decided by the result of those trial treatments. In connection with this company it should be pointed out that the application list closes on March 24.

Prevention of Accidents on the Witwatersrand.

WHAT HAS BEEN ACHIEVED IN THE PAST TEN YEARS — SOME SATISFACTORY FIGURES — RATES DEMAND IMPROVEMENT IN SOME CLASSES OF ACCIDENT—HOW FIGURES RELATING TO DEATHS AND INJURIES FROM EXPLOSIVES HAVE BEEN REDUCED—ABSTRACT OF A PAPER READ AT THE MINING EXHIBITION BY MR. L. G. RAY.

During the past 10 years much has been said and written in connection with the prevention of accidents on these fields. A " Safety First " campaign fathered by the Rand Mutual Assurance Company has been carried on vigorously by means of lectures, free literature, posters, etc., for the past seven years. Much thought and time has been devoted by officials of the Mines Department controlling houses the mines to the attainment of safer methods of working.

Let us examine the result of our labours.

During the year 1920 there were 2,699 accidents reported to the Mines Department by the Witwatersrand Mines. As the result of these accidents, 186 persons were killed and 2,385 injured. The death-rate for the year calculated per 1,000 persons per annum was 2.45. Now compare these with 1910, the year of Union, and we find that 875 persons were killed and 1,554 injured, the death-rate for the year being 4.21.

It will thus be seen that the number of deaths due to accident reported during last year was nearly 400 less than in the corresponding period 10 years ago.

Nevertheless, during the years 1911-1920 inclusive, accidents in or about the Witwatersrand Mines accounted for the death of 6,526 persons and injury to 19,119. Mining has not ceased to be a dangerous occupation on these fields, but we have this consolation that the improvement in conditions has been gradual over a period of years, and this in spite of greater mining depths, the extension of worked-out areas, the great variation in the ground from surface to nearly 6,000 feet and the influx during the past six or seven years of a class of man who had not been brought up from their earliest years with mining as their trade.

In spite of all these things, together with the enforced economy and natural desire for increased production, occasioned by the peculiar circumstances created during the four years of war and those following it, we have not only held our own as far as accident prevention is concerned, but have apparently so greatly improved our systems of working and control that a retrograde step is scarcely to be feared. That there is still room for improvement no one will deny, but we have, I think, reached a point where there will be need of unremitting thought, care, and attention to detail by all concerned, in order to obtain further immunity from death and injury due to accident.

Let us look now at the main causes of our accidents on these fields; they are shown in eight classes on the blackboard.

It will be noticed that " Falls of ground " still account for the greatest number of deaths, 161; that is to say, 33 out of every 100 deaths reported, the number of accidents, 581 being 21 out of every 100 reported. Next in order comes " Falling of material," including rolling stones, etc., which accounted for over 16 out of every 100 deaths and 26 out of every 100 accidents; this gentleman does not make a good showing, it is an increase both with regard to deaths and accidents over any of the previous seven years.

" Trucks and Tramways " also shows an unsatisfactory state of affairs, the number of accidents reported being more than double what it was in 1911, and the number of deaths has only been exceeded on two occasions.

These three types of accidents alone account for over 60 out of every 100 deaths, and 70 out of every 100 accidents reported.

I think you will agree with me that at any rate there is still room for improvement in these three directions, and let me point out that but for the very marked improvement in the death-rate from explosive accidents, we should be very little further forward than we were in 1911.

What has been done with regard to the prevention of explosive accidents can surely be repeated with other types of accident also.

What then has led to the reduction in this type of accident?

I think we can say that it has in a large measure been due to the application of a definite system, the supplying of the necessaries for carrying out this system, a closer supervision of the work combined with a strict enforcement of the regulations framed to meet the requirements, on the part of the management and the officials.

The intersection of unexploded or partially exploded holes was the most prolific source of accidents of this class.

It has been suggested that the best way to reduce the number of accidents of this kind was to reduce the occurrence of misfires to a minimum, and this by means of instruction as to how to secure complete detonation. Whilst being entirely in agreement with this as a principle, it will be admitted that it was a difficult matter to tackle. Although I have known one mine where the shift bosses used daily to log that they had been present when charging up was done, and that the provisions of regulations were carried out, this being the only way that I can see that instruction re proper preparation of charges could be imparted; it did not apparently seem to completely serve the purpose that was intended. The reduction of misfire accidents has been achieved by action at the other end of the shift, in fact, by the efficient application of air and water, and the treatment of every socket as a potential misfire.

It was a long and uphill struggle for the inspectors of mines, but thanks in most cases to the loyal co-operation of the mine officials, this far more satisfactory state of affairs has been attained; how satisfactory a state this is you will perhaps better realise when I mention that in the Johannesburg district in 1918 there was no case of a fatal accident due to the intersection of a misfire in a development end during 129,000 feet of driving, rising, winzing, etc. Of late I regret to say that there has been a tendency for accidents from this cause to increase. Gassing accidents are all too fruitful a source of fatalities have been all but eliminated, and this, I think we can attribute to the combined effect of proper use of ventilating appliances, the provision of waiting places and guards, the systematic inspection of these waiting places and the workings by officials at the commencement of shift and the enforcement of a proper interval between shifts.

Other explosive accidents have been and still are more difficult to deal with, for in these the personal element plays an important part, and it is not possible to systematically supervise the complete preparation and firing of charges.

" Remaining fuses " are still put forward as the cause of accidents, but generally a simple explanation such as too generous timing or inadvertant nicking of a fuse will be found to be the solution.

Perhaps that which still calls for more attention than anything else in connection with explosive accidents is the supervision of the blast and the guarding of entrances; not only are miners too casual in their observance of the regulations dealing with this, but more often than not on enquiring into accidents of this sort I find complete ignorance on the part of mine captains and shift bosses with regard to blasting arrangements. As I have said, the position as regards explosive accidents is the most satisfactory of all classes, but even in this, there is still room for detail improvement, as the following accidents, all of which have occurred in the last two years, will illustrate.

Selected Accidents.

Let us now consider the three types of accident we looked at before with a view to seeing if we cannot find some way of dealing with them in order to reduce their incidence in the same way as has been done with explosive accidents.

"Fall of Ground" as I have shown, still accounts for 21 out of every 100 accidents, or an accident rate of 2.93, but in the last 10 years the number of deaths due to fall of ground has been reduced by about 100 per annum.

The explanation of this as far as I can see is to be found in the adoption of the systematic support of workings: the sudden caving of large areas with attendant great loss of life have become virtually a thing of the past; during the past two years no accident involving the death of more than three persons has occurred on these fields except coincident with or consequent upon large earth movements.

However, accidents due to small falls of ground instead of being on the decrease, seem on the contrary to be rather seriously on the increase; it is fortunate that the bulk of the injuries are comparatively slight (although I want to put to you later any injury is a possible death when sepsis tetanus, etc., have to be reckoned with).

What is the reason for this state of things, and what is the remedy?

One must admit that it is a difficult problem for the personal element plays so important a part.

From the inspectors' point of view, the explosive accidents were more easy to tackle. From enquiries into explosives accidents, some definite reason could be found and remedial measures suggested, together with the application of drastic punishment for the offender. The result of enquiries into accidents due to small falls of ground are often so unsatisfactory, that although one has a shrewd suspicion that all was not as it should be, the evidence and the inspection in loco leave one no alternative but to classify the accident as due to error of judgment or danger inherent to mining, and thus often a careless action goes unremedied and unpunished.

Many of those working in the mines to-day seemingly lack the ability to sense danger and the knowledge of how to guard against it when they meet it; others again, both official and miner, owing perhaps to so much being laid down for them, fail to do more than slavishly carry out the bare requirements of the general scheme of support without ever thinking for themselves. How often have I seen bad ground near the face with no support and been told that "they were not ready for the next pigstye," or have known boys sent to work in areas where because there is systematic support it is considered to be safe and inspection is dispensed with; in this way, perhaps systematic support is not an unmixed blessing.

The old miner with knowledge born of many years' experience, was on the whole quicker to realise bad ground and as miner or official safeguard himself and those under him.

To-day many a sound miner who would be invaluable as an official will not tackle the job, both on account of the difficulty of his position and the greater attraction of contract work with higher pay and the minimum of worry.

I have noticed of late in examining shift boss record books in two districts, how few incidents showing carelessness on the part of the men are reported. I can hardly bring myself to acknowledge that this really represents the true state of affairs, and one wonders perhaps if a little closer attention to detail on the part of the officials and a little more reasonableness and desire for co-operation with regard to the observance of minor safety measures on the part of the men might not have the effect of diminishing the number of accidents due to small falls of ground.

It has been my lot and that of other inspectors to draw attention to what obviously was dangerous ground, and to be met with argument and endeavours at justification from the man addressed. If that is so with us, well, I can understand what a mine official has to put up with to-day.

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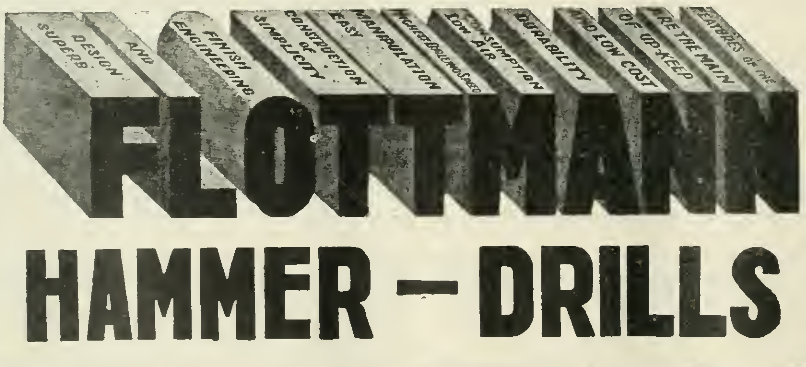

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Reduction of Accidents.

IMPORTANT LECTURE BY MR. WONNACOTT.

"We should have the full co-operation of the mining industry and everyone engaged in it to bring about a further reduction of fatal accidents on the mines," said Mr. John Munro, who presided on Saturday night last at Mr. R. H. Wonnacott's lecture delivered during the Mining Exhibition at the Scientific and Technical Society's Rooms, Johannesburg.

"In 1911, before the Prevention of Accidents Committee was formed," he proceeded, "the extent of the death rate was 4·10 per thousand. Later, it was reduced to 2·43 per thousand. We are not satisfied yet. In England the rate stands at 1 per cent., in New South Wales it is under 1 per cent., though in America it is higher than here, for in 1917 it was over 1 per cent."

These remarks were made in introducing Mr. R. H. Wonnacott, whose lecture concerning safety methods in mining preceded a prize-giving, in which the prize for the best absolute record in respect of immunity from fatal accident went to the Aurora West United Mine, with a record of nil. For the best percentage improvement prizes went to the Meyer and Charlton, the Witwatersrand Gold Mine, and the Van Ryn Deep.

Mr. Wonnacott at the outset said that one of the difficulties under which the mining industry laboured was that many individuals, who by reason of their skill and experience would be eminently suited to occupy responsible positions, preferred to continue working as contractors, probably because of the gamble and possibility of making what was known as "the big cheque." It seemed to him that a step in the right direction would be to make an alteration in the methods which permitted that.

Safety and Efficiency.

Efficiency, he contended, meant safe mining, and a man who studied how to work efficiently could not fail to study the safety aspect. The first duty of all miners was to become conversant with the mining regulations. These were framed for the purpose of advising the underground workers what to do and what not to do, and if such advice were strictly followed, accidents in all their phases would be to a great extent avoided.

The lecturer said that lashing was often regarded as a very unimportant branch of mining, and, as a consequence, men with little or no underground experience frequently found themselves in charge of gangs of natives. He had time and again seen men in charge of gangs lashing, when the first principle was not understood. The natives would be seen lashing broken rock in a stope all bunched together and in each other's way, when really they should be strung out and each one made to lash his portion of the rock its full distance. In the whole of the mining world he was sure that there was not such a waste of labour as that which took place on the Rand in that respect.

He had always found that a man who had the ability to control and organise native labour was well worth any little extra wages he was paid above that of the inexperienced man. The extra wages attracted a better class man, who increased efficiency and lowered costs.

With regard to trammers, he urged them constantly to watch their tracks. He believed that the more extensive use of the gad, as recommended by Mr. A. M. Archbold, Inspector of Mines, would lessen accidents from hanging walls. The frequent practice of commencing to take down loose rock and then leaving it because it would not yield to pressure on the bar, had, he declared, been the cause of a number of fatal accidents. If the bar had been inserted at a different spot it was probable that the rock would have fallen out with a minimum of effort.

Machine Stoping.

Turning to machine stoping, he said the average stoping efficiency for the Rand was low, and there were a number of reasons which would account for that. One of the most noticeable was the way in which some miners left their most essential work to their natives, so that miners were often seen at their boxes very early in the shift instead of being at their working place superintending the general work of their stope. The natives were shown their holes and the direction in which to drill them by the miners, and were often left at that point, in consequence of which the holes were frequently drilled in the wrong direction.

This was more particularly the case when there was a bad collar to cut. The drill was allowed to slip in almost any direction, and consequently the hole had either far more burden than it should have, or not enough, or the hole might point into the foot or hanging, and, if blasted, would break the stope too wide and shatter the wall. It would thereby make it heavy and dangerous to work under, and perhaps cause accidents to the workers.

The lecturer also dealt with hammer stoping and development, and remarked, in conclusion, that the question of the inexperience of the miners was undoubtedly very serious—a fact which had been recognised by the Government and the Chamber of Mines—and he commended the Miners' Training Schools at Wolhuter and Modder B. to the fathers of sons whose intention it was to take up a mining career.

Concerning Mines and Men.

Mr. J. Dale Lace left on Thursday night on a business trip to England.

* * * *

Mr. Edward Houthakker has joined the Board of the African Platinum Mines, Ltd.

* * *

Mr. S. B. Joel paid a business trip to Capetown this week and is due back on the Rand to-night (Saturday).

* * * *

Mr. H. Meyer, of the engineering staff of the Central Mining/Rand Mines group, has returned from a six months' holiday in England.

* * * *

Mr. H. Clarkson Fletcher, of the well-known Rhodesian mining machinery firm of Johnson and Fletcher, has been on a visit to the Rand.

* * *

During the week we were paid a call by Mr. A. C. Homersham, a well-known pioneer Rand metallurgist, who is visiting South Africa in the interests of the Minerals Separation Company.

* * *

Mr. A. J. Beaton, M.Inst.C.E., M.Inst.T., C.M.G., late Assistant Engineer-in-Chief to the South African Railways, has joined the Board of Directors of Messrs. Sturrock (South Africa), Ltd., of Johannesburg.

* * * *

The staff of the Union Corporation group of mines gave a farewell dinner to Mr. H. Newhouse on Wednesday evening. Mr. M. McCormack was in the chair, and made one of his characteristically felicitous little speeches.

* * * *

The Saxon, which sails from Capetown on April 8, will carry several prominent Randites. Mr. G. Imroth and Mr. H. Newhouse have booked by her, and Mr. G. Sonn is also on the same passenger list. Probably Sir Lionel Phillips may also sail by her.

* * * *

At the monthly meeting of the S.A. Institution of Engineers on Wednesday night Mr. J. W. Kirkland, the vice-president, took the chair vacated by the president, Mr. J. Whitehouse, who is going on leave. Mr. Kirkland paid an eloquent tribute to Mr. Whitehouse who, he said, had in the year ably filled the dual rôle of president of the Mine Managers' Association and of the Institution of Engineers. At the same time he had managed with conspicuous ability one of the most difficult mines on the Rand during one of its most critical years. Mr. Kirkland's remarks were heartily endorsed by all present.

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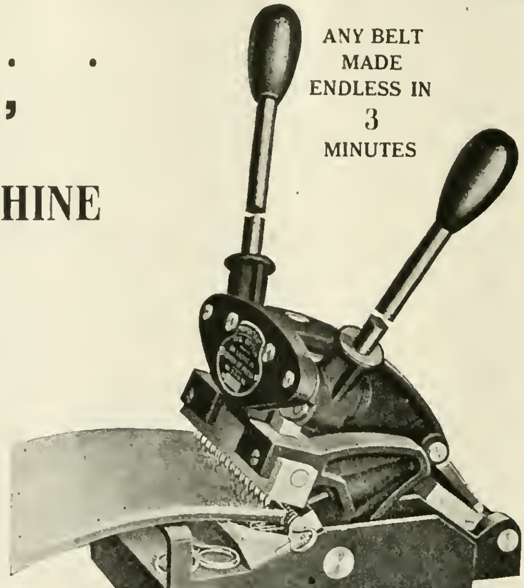

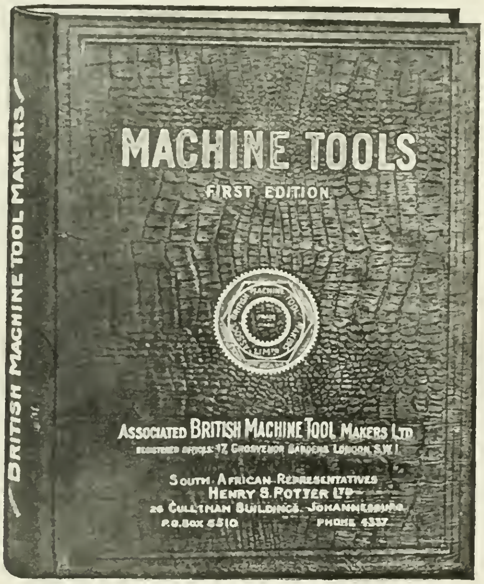
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CHEMICAL, METALLURGICAL AND MINING SOCIETY.

The ordinary general meeting of the Chemical, Metallurgical, and Mining Society will be held in the Scientific and Technical Club, 100, Fox Street, Johannesburg, on Saturday, the 19th inst., at 7.45 p.m.

General Business:

Symposium: "Miners' Phthisis." Discussion will be opened by Dr. A. J. Orenstein.

Final Discussion: (1) "Investigations made with the Konimeter to ascertain the Amount of Dust produced in drilling holes by means of Dry Jack Hammer Machines," by H. E. Barrett (Member); (2) "A Resume of Literature on the Theory of Flotation with Critical Notes," by H. R. Adam (Member of the Council).

Discussion: (1) "The Ideal Mining Law," by C. J. Gray (Member of Council); (2) "Notes on the Influence of Soluble Silica and Calcium Salts on Precipitation," by J. Hayward Johnson (Member of Council); (3) "Note on Experiments on Ventilation Problems in Development Work on Mines," by E. J. Laschinger (4) "Practical Use of Hill's Kata Thermometer," by H. J. Ireland; (5) "Cementation of the Substrata of the Mazoe Dam Retaining Wall," by Dr. G. A. Voskule; (6) "Chemical Methods of De-aeration of Water of Solutions," by H. A. White (Member of Council); (7) "Treatment of Antimonial Gold Ore at the Globe and Phoenix Mine, Southern Rhodesia," by V. E. Robinson (Member); (8) "Occurrences of Fire Damp on the Far East Rand," by T. N. Dewar (Member).

SOUTH AFRICAN INSTITUTION OF ELECTRICAL ENGINEERS.

The President and Council of the S.A.I.E.E. have issued a cordial invitation to the members of this Society to attend their Ordinary General Meeting at the Scientific and Technical Club on Thursday, the 17th inst., at 8 p.m., when Mr. L. B. Woodworth (President) will give a short paper entitled "A Few Notes on Magnetic Separation." After the meeting a demonstration of the "Woodworth-Tregaskis" Magnetic Separator under full operating conditions will be given in the basement.

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Mining Notes & News.

Owing to extreme pressure on our columns consequent on the inclusion of a number of special pioneer articles in this anniversary number, several features are unavoidably excluded from this impression of the journal. The Busy Man's Page will appear in the next and succeeding issues of the paper, and some technical descriptions of exhibits at the Mining Exhibition will appear next week.

* * * *

Enemy Shareholdings.

Just as we go to press we hear that a satisfactory basis for settlement of the problem of disposing of enemy shareholdings has been reached. The report lacks confirmation, but we have reasons for believing that it is substantially correct.

* * * *

A New Coal Flotation.

The latest coal flotation is attractively named the Middelburg Collieries, Ltd. The company is registered under the Company Laws of the Orange Free State and was incorporated on the 28th December, 1920. The capital of the company consists of 2,500 shares of the nominal value of £10 each. The company has entered into an agreement with L. J. Lithman, who will cede to it an option over the farm "Schoongezicht," Middelburg, Transvaal, also other properties which the company has the right for six months to acquire for £20,000 in shares or one-half cash and one half shares. An option over the farm Roodepoort No. 250 has beed ceded to the company. The working capital consists of 1,250 shares, which the promoter has the right for three years to take up at par. The company has the right to issue £75,000 debentures or more and to increase the capital. The properties of the company are as follows:—Zaaiwater (825 morgen 336 square roods). The company has the right to prospect this farm and during a period of three years has the sole right to lease the coal rights of the owner for an indefinite period. The rental is £100 per annum, increasing by annual increments of £100 for ten years. There are no Royalties payable. Schoongezicht (1,000 acres): The company has a perpetual lease at a rental of £100 per annum, rising to £400 in four years and the right to purchase within two years at £4,000. Wildebeestefontein (600 acres): The company has the option to purchase the coal rights at £5 per acre.

Mr. H. R. Powell has made a very favourable report on these properties, which lie in the centre of a group of producing collieries, and he prophesies a highly prosperous future for the venture.

* * * *

The New Kleinfontein in 1920.

Mr. E. J. Way's report on the operations at the New Kleinfontein in 1920 is, as usual, a model of what a consulting engineer's report should be. He discusses the principal features of the year in the following order: Results of development, results from reduction works, working costs, and general. Results of development: The annual re-estimation of the ore reserves shows that on the 1914 basis there were developed in the Kleinfontein section of the mine 1,623,574 tons of an average mining value of 5·32 dwts. over a stoping width of 57·66 inches. In estimating the ore reserves for 1920 the tonnage developed at the Apex section which heretofore had been included in the ore reserves of the mine, has been omitted. This tonnage amounted to 374,997 tons, having a mining value of 4·98 dwts. over a stoping width of 60·24 inches. The difficulty of fixing a limit of pay value still exists on account of fluctuating working costs and the price of gold. For this reason I again submit a table showing the tonnage of ore estimated to be available on various pay limits and the estimated recovery value, taking the product at its standard value, after making due allowance for sorting and for recovery losses. (The table appeared in our columns last year.—Ed.) It is encouraging to know that in the old Benoni section of the mine, new development during the year has disclosed ore of somewhat better value than the past average. These better values are found in somewhat narrow shoots and comparatively small patches as development proceeds, and have in many cases been successfully traced from level to level. I anticipate that a fair tonnage of better ore will be drawn from this section in future. Results from reduction works: During the year all milling work was done at the Kleinfontein plant, full details of which are set forth in the manager's report. The extraction results are not so good as last year, which is explained by the fact that the Apex plant results were included in last year's statement. This plant has always given better results than the Kleinfontein plant. Since May, 1920, the Apex plant has been under lease to the Modderfontein East Company. Working costs: The working costs for the year under review were £1 8s. 5·3d. as compared with £1 6s. 2·8d. for the previous equal period. This is to some extent accounted for by the fact that 68,200 tons less were milled than for 1919; but there have been further increases in wages and in the cost of stores, which also contributed to the increase in working costs. The working profit for the year was £76,498 19s. 3d. as compared with £103,095 1s. 9d. for the previous year. On 1914 conditions the working profit would have been £185,813 11s. 3d. General: I beg to draw your attention to the remarks I made last year with regard to the alteration in underground hours. Under existing conditions it is extremely difficult to get the work done in a 48-hour week, and the year's figures again prove that the decrease in production per shift worked is almost exactly in proportion to the decreased hours "at the face." Production would be very greatly hampered if any further decrease in the working hours underground were agreed to, and this must always pertain while native labour is employed under existing conditions.

THE HISTORY OF THE "S.A. MINING JOURNAL."

ITS BIRTH AND EARLY BEGINNINGS—THE CONTEMPORARY AND CHRONICLER OF THE RAND INDUSTRY—ITS CONTRIBUTIONS TO SCIENTIFIC AND ECONOMIC PROGRESS—A GLANCE AT THE PAST—SOME UNIQUE TESTIMONIALS.

By Clem D. Webb.

To mark the 30th milestone on its road, I have been asked to write a brief account of the history and beginnings of this journal. In one capacity or another I have been connected with the paper during the vicissitudes of the past thirty years, and I gladly undertake the task of reviewing those years so full of interest and incident. As far back as 1887 the Rand had its "Mining Journal," though its pages were mainly made up of prospectuses of new flotations, and dry official details of initial programmes and outputs. Later on, when the Great Slump of 1891 was passing, on September 19 of that year, the "South African Mining Journal & Financial News" first made its appearance with the sub-title of "A Journal for Investors, Mining Engineers and Managers." A few lines in the concluding paragraph of the usual editorial apologia with which every newspaper launches itself are worth noting: "It is not without a hope that this journal may have its beneficial effect upon the interest which it represents that its proprietors despatch it on its career." The paper appeared at first in a fortnightly issue, but after the second number it was decided to produce it weekly, as at present. The first number covered twenty pages, and contained the text of the "Amended Gold Law"; a table of mileage from Johannesburg to Fort Salisbury, for the information of intending travellers to Mashonaland and Matabeleland; a paragraph on the appointment of Mr. Klimke as State Mining Engineer; Kimberley notes; a report of the monthly meeting of the Chamber of Mines, in which one notes that complaints from several managers had been received as to the quality of Transvaal dynamite. Then come the reports of various companies; an article on electricity for mines forecasting many of the uses to which it is put at present; mining intelligence; monthly return of the output, which in August, 1891, amounted to 59,070 ounces, with an average yield of 12·11 dwts. per ton; report of the share-market, where an advance of 20 per cent. on good stocks is noted; ruling prices of mining material; information to the effect that the Chartered Company possesses sufficient funds for two years; Zoutspansberg note, in which "great anticipations are entertained as to the crushing now taking place at the Birthday"; coal mining notes; legal; mineral discoveries, including a strike of antimony at Steynsdorp; Barberton notes; and lastly some pages of advertisements, the most beautiful feature of any paper from the proprietor's point of view.

The Next Stage.

The third issue of the paper announced the absorption of the "Witwatersrand Mining and Metallurgical Review," edited by Mr. E. P. Rathbone. Among the "Personalia" in this same number, the following takes one back considerably: "Mr. Rhodes and party at M'Panda," "Lord Randolph Churchill has been advised to go Home by some other route than the Transvaal. If he comes back to the Rand, it is hoped he will have learnt some wisdom, and not depend wholly for mining advice on Mr. Perkins, who has enjoyed a valuable experience in Venezuela, but knows nothing of this conglomerate formation and its peculiarities." The foregoing advice was apparently taken, for in the next issue we read that "Lord Randolph Churchill is reported to have left Manica on the 8th instant with the intention of shipping from Port Beira on the 10th proximo. It is said that he is disappointed with Mashonaland."

The First Proprietors.

On its inception in 1891, the paper belonged to a syndicate composed of the leading mining interests of the Rand. The syndicate included such well-known names as Messrs. H. Eckstein & Co., the Consolidated Gold Fields of South Africa, Ltd., Messrs. Adolf Goerz & Co., Ltd., the African Gold Recovery Syndicate and Dr. Magin. Messrs. Eckstein's representative on the board was Mr. G. Rouillot, at one time President of the Chamber of Mines. His alternate was Sir Percy Fitzpatrick, who afterwards took Mr. Rouillot's place on the board and took an active interest in guiding the policy of the paper, as befitted a business man with literary tastes. Mr. A. Brakhan represented Messrs. Goerz & Co., Ltd.; Mr. Frank Lowry the Consolidated Gold Fields, and the African Gold Recovery people were Messrs. J. M. Buckland (fortunately still an active factor in Rand public life) and Mr. W. W. Webster, whose name will be familiar to many pioneers. Despite the fact that the control of the paper was thus virtually in the hands of the leaders of the industry, it was spread so broadly among the houses of those days that its impartiality and integrity were completely secured. It should here be mentioned that Sir Lionel Phillips from the first was a valuable friend to the paper, of which indeed he was once described as the godfather. My connection with the paper began at its birth in 1891 as secretary to the board, expanding—a little later—to the general management, and continued in that capacity up to the outbreak of the Boer War in 1899. After the conclusion of the Boer War, I decided to be my own master, and, encouraged by cordial promises of support from the most

THE LATE JOHN STUART, AN EDITOR OF THE "MINING JOURNAL" IN THE MIDDLE 'NINETIES: A BRILLIANT WRITER.

prominent men in the industry, I revived the Journal under the slightly different title of "S.A. Mines, Commerce and Industries." Later on, with the consent of all those interested in the pre-war syndicate, I resurrected the old title, "The S.A. Mining Journal," and this remained until the close of the Great War, when on my return from France I endeavoured to indicate the broadening of the paper's scope and purpose by extending the title to "The S.A. Mining and Engineering Journal." And this, I trust, will remain its name, unchanged, through the spacious times ahead.

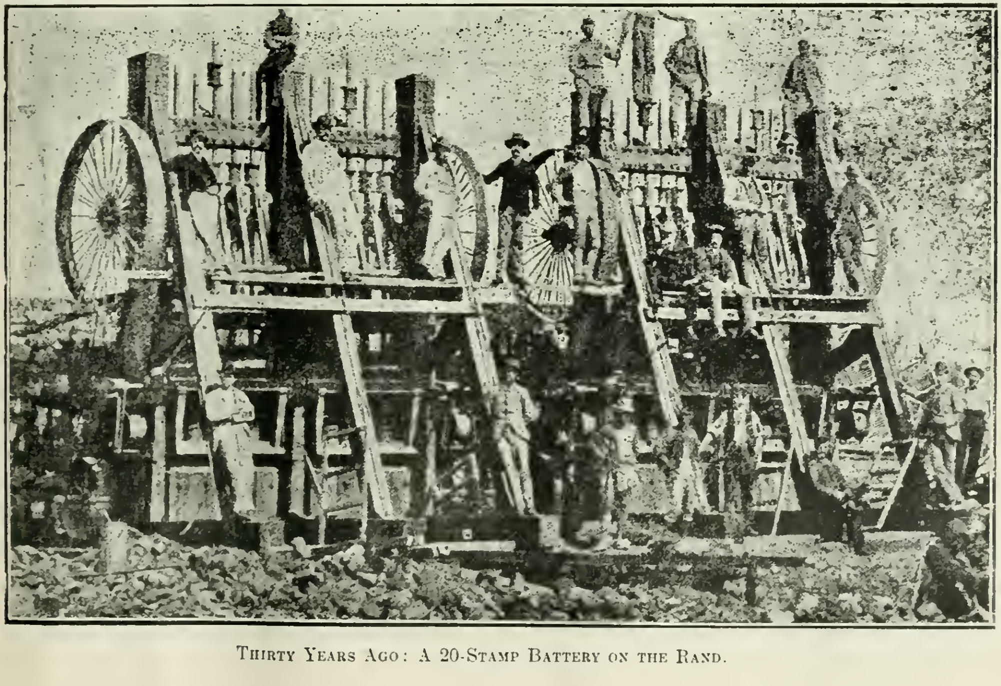
Contributors and Early Editors.

Amongst our contributors in the past we can count such names as those of Messrs. John Hays Hammond, the late Henuen Jennings, the late Hubert Davies, George Denny, H. S. Denny, A. R. Sawyer, Sir Percy Fitzpatrick, Dr. F. H. Hatch, and many more of greater or lesser celebrity. There was "so little done so much to do" in the days when the cyanide process had not yet come to solve the problem of pyritic ores then beginning to show in depth; when Butters was introducing the chlorination process at the Robinson Mine, whose directors were always foremost in their generous encouragement of scientific experiment; when (in April, 1892) the average duty per stamp per day was the ludicrously low figure of 2·67 tons. We are to-day able to export such men, home-made, to wherever they may be needed; but it was Perkins and Hamilton-Smith, and the Jenningses, and Hays Hammond, George E. Webber, H. H. Webb, Hellmann, and others of world-wide-known names, who slowly and steadily rehabilitated the Rand. They were not selfish in their generation; they taught and showed the best to all comers, and made free use of the pages of the Journal to do so. Many have held the editorial chair. Mr. E. P. Rathbone; Mr. Stevens, brother of the great "G. W."; Mr. Wilson-Fox (the manager of the Chartered Company); Mr. C. F. Tainton; the late Mr. John Stuart; Mr. A. E. O'Flaherty; the late Mr. R. J. Pakeman, and the late Mr. H. Clayton have all done their share in laying the foundations of the paper's authority and influence.

Notable Tributes.

The late Mr. Pakeman brought the history of the paper up to sixteen years ago. Writing in 1905, after he had severed his connection with the Journal, he recorded how in these pages were originated many fruitful but now familiar scientific processes. "The paper," he wrote, "was the first to suggest the sorting of ore and the addition of rock-breaker houses in 1890. It recommended the self-dumping skip, and advocated the conversion of waste coal into electrical power. It 'wrote up' cyanide before cyanide was here, and agitated for the direct delivery of coal in bulk to the mines and the provision of side-tracks from the main line for that purpose. It projected huge mills when the one hundred-stamp mill was yet a colossal and audacious idea. It urged, and successfully urged, the merits of concentrating tables and Ingersoll-Sargeant rock drills, and in the region of accurate 'costing' per ton milled it successfully pioneered the first-class work of that kind which is done on every established mine to-day. From its pages sprang the Mine Managers' Association and the South African Association of Engineers; and it was unceasing, in an era of State indifference, in its advocacy of the formation of a technical institute, which has only been realised under British government. It fought for discrimination between the fit and the unfit in skilled mining work, for State supervision and certificate; it fought for the introduction of adequate mining regulations in the interest of the miner; and in the great war against the vicious Dynamite Monopoly, which fed like a vampire upon the vitals of the industry, it took a foremost and formidable place."

Writing of the same strenuous days, another former editor, Mr. C. F. Tainton, said: "The mines and the miners were to play a great part in the Jameson Raid; but when Jameson failed to get through—he chose the time of full moon—it was decided that thirty thousand cartridges would not suffice to carry the revolt to a successful issue. All the leading men connected with the mines found themselves inside Pretoria gaol, 'The Star' newspaper was suppressed, and for the first time in its history the 'South African Mining Journal' found itself in some degree a political organ. Detectives began to stroll about its premises, and messages were received from Dr. Leyds threatening suppression. But the political movement could not be stayed, until finally the South African League came into being. Its leading principles were drafted in the 'Mining Journal' office, forwarded for adoption to the Cape Colony and Natal, and an active propaganda began which ended in the final breaking down of the barriers which had prevented the amalgamation of the old and the new."



THIRTY YEARS AGO: A 20-STAMP BATTERY ON THE RAND.

Recent History.

The more recent history of the *Journal* is not less intimately bound up with the history of the industry. It wrote up tube mills and filter-pressing when these things were almost unknown on the fields. It examined the wages system and general hygienic conditions of the mines when little attention was given to these matters. It foreshadowed and set out in great detail the whole case for amalgamations when that momentous alteration in the industry was undreamt of by the general public, and it discussed and debated in all its forms the question of electrifying the mines of the Rand by the introduction of mammoth central power stations. When Rhodesia was still in the cold shades of public disfavour, it reported on and confidently recommended the more promising propositions of that country to the investing public in Europe and South Africa. It advocated the employment of stope-drills before the Rand woke up to the value of those important labour-saving devices, and the competition organised by the paper, out of which the Government-cum-Chamber of Mines stope drill contest grew, was one of the most successful and useful undertakings promoted by the paper—perhaps, indeed, by any technical paper. In this connection mention should be made of the services of Prof. John Orr, who did not spare himself in the effort to find the most suitable drill for the industry. Among the matters that engaged the attention of the Journal more recently may be mentioned the great problem of phthisis and artificial ventilation on the Rand.

Its campaign in favour of opening up the Far East Rand, and the successful fight it made for legislation to facilitate that development, will be fresh in the memory of readers. Its fearless and intelligent handling of the vexed currency question and the lead it gave the Chamber of Mines in regard to the collection of union subscriptions by the employers are among the paper's latest triumphs. I have not attempted to survey the vast agglomeration of technical literature that has filled our pages on such ever-present problems as Rand geology, the tin mines, big mills, underground mechanical haulage, pumping, hoisting from great depths, temperatures, reef vagaries, air pressures, heavy stamps, modification of cyanide practice, accidents, labour matters, and the outstanding questions of hygiene and education, and their bearing on the future manning of the mining industry. These are matters still for the most part in the melting-pot; they will continue to excite discussion and to demand space in our columns for many years to come.

Some Unique Testimonials.

I may be pardoned, however, if I here quote very briefly from some striking encomiums lavished on the Journal by leading men in the industry on the occasion of the paper's twenty-first anniversary nine years ago. It is not too much to say that seldom, if ever, has any paper, technical or otherwise, had so many flattering things said about it. On that occasion Sir Lionel Phillips wrote: "The *Journal* . . . is an organ in which I have placed great confidence. It is to a large extent due to its influence that many improvements have been effected in mining methods. As the only strictly mining paper here it enjoys a wide circulation in South Africa, and is filed by all responsible mining men, as well as by those who have the placing of orders for the requirements of the industry. It is an excellent advertising medium, and may, I think, be used with advantage by merchants and manufacturers for that purpose."

Sir Drummond Chaplin, then head of the Consolidated Gold Fields, wrote: "The *South African Mining Journal* is the recognised organ of the mining industry in this country: it circulates amongst all directors, managers, engineers, and those who have the placing of orders for the requirements of the mines of South Africa. The paper deserves the support of all those who are interested in the advancement of the mining industry of this country. It also has a wide and influential circulation amongst the leading commercial people of South Africa."

The late Sir George Farrar wrote: "The *South African Mining Journal*, to which we have subscribed for the past twenty years, is an organ in which we place the highest confidence. The *Journal* has, throughout its life, aimed at the advancement and betterment of mining in this country, and its advocacy has undoubtedly contributed largely to the improvements effected in mining methods during recent years. It is read by practically everyone connected with the mining industry in South Africa, either directly or indirectly; and in our opinion it is without a superior in the mining world of South Africa."

Sir Abe Bailey wrote: "It is pleasing to record my appreciation of the manner in which your paper is kept up-to-date and the reliable information which is found therein. So much so do we recognise this that a full file of your paper has been kept in this office for years as a

Early Days on the Diamond Fields: The Kimberley Mine in 1872. Here the great house of Wernher-Beit laid the foundation of the Corner House Group many years ago.

reference both for mining news and statistics and for advertisements as to the suppliers of various kinds of machinery and mining requirements."

Mr. John Munro wrote on behalf of the " J.C.I.": " It affords us pleasure to testify that so far as the mines connected with this group are concerned, your publication is the recognised organ of the mining industry in this part of the world, and also that it is circulated amongst all those who are interested in mining matters in South Africa."

Sir George Albu wrote: " We have pleasure in stating that we have for many years subscribed to the *South African Mining Journal*, and that its columns have afforded us much useful and interesting information. We know that our engineers and other technical advisers, as also the managers and other senior members of the staff of the mines under our control, are subscribers to and think highly of the *Journal*. We believe that the paper has a wide circulation amongst all classes of the community, and the fact that we use it for the publication of the reports and accounts both of this corporation and of the subsidiary companies of our group, and also for the advertisement of commercial concerns in which we are interested, is evidence of our belief in the value of the *Journal*."

From London Mr. S. B. Joel wrote: " On the occasion of your twenty-first anniversary, I have much pleasure in congratulating you on the continued success of your *Journal*, which is well deserved, owing to the able manner in which all technical matters and economic problems are dealt with. Wishing you and your paper all success in the future."

The late Sir Sigmund Neumann, in concluding a lengthy letter, wrote: " The interests of your *Journal* are so bound up with the growth and prosperity of the mining industry of South Africa that, with the prosperity of that industry, I am confident your *Journal* will continue the useful and prosperous career which I, in common with your many friends, desire for it."

Similar striking tributes were received on that occasion from a host of friends of the paper, notably from Lord Harris, Messrs. L. Reyersbach, Hugh F. Marriott, H. H. Webb, John Hays Hammond, and George Rouillot. These are all among the most cherished records of the paper, and they serve to stimulate us to fresh effort and unceasing endeavour to continue to deserve them.

It will remain the mission and privilege of the *Journal* to spread a knowledge of the industry and its manifold problems through all the States of the Union, whose representatives now have the destinies of the industry in their keeping. That, surely, is an ambition which, added to our other aims, should ensure for our readers and supporters that in interest, scope, and value the *Journal* in the coming years will suffer no diminution, and that the qualities and features that have raised it to its present position will be maintained and improved.

WIT. DEEP.

The estimate of results for the month of February, 1921, is as under: Tons milled, 32,060; gold recovered, 9,485·466 ozs.; average number of stamps running, 165; stamps running time, 22,155 days; tube mills. 5; development footage, 277. The working expenditure, including head office charges for the month, is £41,346, or 25s. 9d. per ton. The estimated working revenue based on an estimate of £5 3s. 9d. per fine oz. is £49,205, or 30s. 8d. per ton. The estimated working profit is £7,859, or 4s. 11d. per ton, from which is to be deducted the capital expenditure for the month of £1,446, leaving a surplus of £6,413.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES *vs.* BAR FRAMES."

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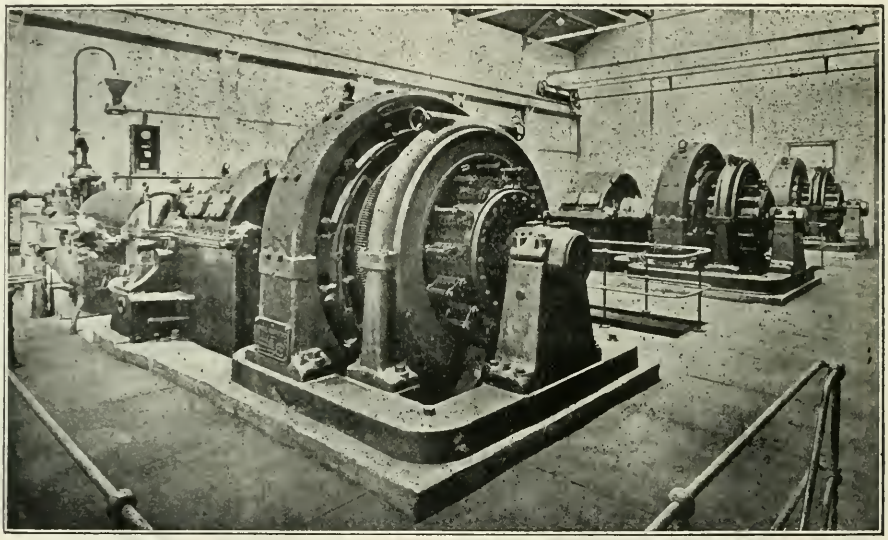

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The Evolution of Rand Mining.

Review of Early Milling and Mechanical Practices upon the Witwatersrand.

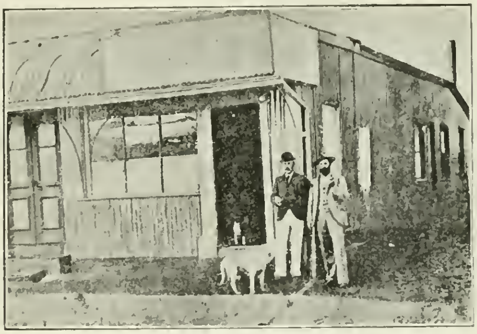
By David Gilmour.

> In this issue we present some extracts from the valedictory address of Mr. David Gilmour upon his retirement from the Presidency of the South African Association of Engineers seventeen years ago. We find so many features of historic interest throughout this address, features which supplement what Mr. Hennen Jennings and Mr. Harry H. Webb wrote about these fields and the industry, and what Mr. Harry S. Denny wrote of metallurgical practices, that we have decided to re-publish Mr. Gilmour's remarks in this thirtieth anniversary number.

Early Days on the North Rand.

When the goldfields were first proclaimed there was no machinery on the spot, but previous to this the persistent faith shown by the Struben brothers in the district, and which resulted in their erecting their now historical five-stamp battery on Wilgespruit in 1885, had induced others to share in their belief. Strubens' mill was a steam-driven one, and in the early part of 1886 Erasmus and partners erected a mill near the same site that was similar, but the power for which was obtained from the spruit through a vortex turbine made by Gilbert Gilkes, of Kendal. Almost simultaneously with this a small syndicate was working on the farm Kroomdraai, and they erected five stamps also, which were driven by an overshot water wheel, 22 ft. diameter and 3 ft. breast, constructed locally from South African timber, the ironwork being imported from Natal; all these mills were of Sandycroft make. At that time the only fuel available was bush timber, which was expensive; hence it was the aim of prospectors to get the mill site near some source of water power. When one considers the short time that Strubens' mill had been at work, and the fact that the Main Reef proper was only first discovered in the early months of 1886, the next step which was taken by Mr. William Knight, in June, was a bold one, it being further remembered that the goldfields were not then proclaimed, that event not occurring till the 18th of August, when the farm Doornfontein was proclaimed, followed by Turffontein on the 27th September, and Roodepoort on the 29th of the same month. The June event referred to was the entering into a contract between Mr. Knight and Robey & Co.'s representative at Pretoria, under which they were to supply him with a mill of 100 stamps complete with vanners. So extraordinary does this seem that a few details of the plant may be worthy of record. The contract included the supply and erection of foundations, houses, crushers, engines, boilers, stamps, Jordan's patent amalgamators and vanners, the design being by Jordan Sons, and Commans. The contract price for the job was £21,000, and, as an example of the proverbially sanguine temperament with which engineers are endowed is probably unsurpassed, for the whole plant was to be ready for working by Christmas of the same year. This was not accomplished, however, until 1888. The plant had originally many features which distinguished it as being a great advance on all previous local practice. The stamps were divided into groups of 25, each group having one cam shaft, at one end of which was a spur wheel, which took the place now assigned to the cam pulley. These were driven by spur pinions and clutches on countershafts which extended across the full width of each 25 stamps, each countershaft being fitted at one end with a pulley for driving a crusher, and at the pinioned with a pulley for taking the belt which came from the engine flywheel. There were two engines (duplex 18 in. x 28 in. non-condensing) and four flywheels, each flywheel driving 25 stamps as described, steam being supplied by four locomotive boilers. The engines and boilers were in the mill shed without being partitioned off, for these were the days when the battery hand had to run the engine, stoke the boiler, attend to the mill, crushers, and other machinery, retort the gold, and do all the other work about the mill. The crushers delivered into trucks which were run along a track behind the mortar boxes at a level which permitted their contents being tipped into the feeders, which were of the Tulloch type. The site was an exceptionally good one, 200 yards south of the present dam at the chemical works, there being a good fall to ensure freedom from banking tailings, and there was also a good water supply. The ore was brought from the mine on a tram road worked by mules, and, being a down grade, the trucks came down by gravity; this at the time the mill started was the first tramway to a battery.

The Transport Difficulties of Thirty Years Ago.



Telegraph Office in Johannesburg (Market Street) in 1887.

The First "Deep."

Through 1887 many small mills were erected and at work on the Main Reef, many of them on ore of phenomenal richness, notably the Jumpers, with over 9 ozs. per ton. In the face of the scepticism then prevalent regarding the continuance of the reef in depth, it was about this time that Robertson and a few others started a shaft south of the May Consolidated, on what was known as the May Deep ground. Their faith was rewarded some two years after by the Main Reef being intersected at 360 ft., the width being 5 ft., and the return 30 dwts. over the plates. The absence of water power in the district was compensated by the value of the ore being sufficient to warrant the adoption of steam plants, so that progress was continuous. Coal was obtained principally from Steenkool Spruit and Wilge River, and though the quality was good the cost was about 50s. per ton in summer, while in winter 90s. was paid. Among the mills running during the year, besides Strubens', were the May, Salisbury, Ferreira, Metropolitan, Grahamstown, and Morning Star, with five stamps each, the Jubilee with eight, the Wemmer, Crown Reef, George Goch, Northey, Central Roodepoort (now the Roodepoort G M. Co.), City and Suburban, Stanhope, Robinson Syndicate (now the Langlaagte Estate), each with ten stamps, while among the largest mills were those of the Geldenhuis Estate, Jumpers, Banket, and the Gold Fields of South Africa at Luipaard's Vlei, which had 20 stamps each. The Meyer and Charlton, Royal, Nicholson, and Wolhuter had also mills at work. At the end of the year the Knights Company had dropped their stamps, the opening ceremony being performed by President Kruger, who was presented on the occasion with a small bar of gold. The total recorded production for the twelve months was 23,125 ozs., but the Wemmer, which was the first company of which any official return is obtainable, did not commence crushing till May, and then only with five stamps, so that the output may be said to result from six months' work of the companies mentioned. It might be mentioned that the gold won was not smelted, but was sent to the bank as it came from the retort.

Mills Nine Miles from Workings.

Most of these mills were situated at sites where water for the places was readily obtainable, and as showing the importance that attaches to this feature the prospectus of the Leeuwpoort Company says.—" The water is nine or ten miles distant from the claims, but the road towards the water is almost wholly sloping." The system of working by open trenches was in vogue, and in this connection it is interesting to read that the Jumpers Gold Mining Company about this time purchased a windmill pump to clear their mine of water. But prospecting shafts were being sunk along the reef and open workings was giving way to regular mining. The incline shafts on Langlaagte Estate were laid out and were about 12 ft. by 5 ft. Towards the end of the year the discovery of coal in the neighbourhood gave another impulse to development and assured the success of many ventures that till then were doubtful. Naturally, up till this time very little was known as to the cost of mill construction, and disputes between owners and contractors were frequent, the principal bone of contention being, as it is to-day, the definition of what was meant by a job being " completed." The mills thus far were not as a rule supplied with crushers and feeders, these operations being performed by hand.

Advent of American Mills.

Hoisting was done by whims and whips worked by oxen and mules. Early that year, however, the Wemmer Gold Mining Company imported a small geared Davey Paxman hoist from Kimberley, which was the first one introduced here, and that year saw great advances in mechanical appliances. The first American mills made their appearance and got to work early in 1888—one being of twenty stamps originally ordered for the Kimberley Imperial Mine at Barberton, which Company had collapsed owing to adverse reports on the district, and the machinery for which was stopped en route and purchased by the Bantjes Gold Mining Company, and another of thirty stamps imported by the Paarl Pretoria Company (afterwards Paarl Central). These mills came out from Messrs. Fraser & Chalmers' works completely framed, and were equipped with Blake ore crushers, Corliss engines, return tubular boilers and the celebrated Frue vanners. Small mills on the previous lines continued to be erected in great numbers although some were beginning to assume fairly large dimensions, two of the largest (excepting the Knights 100 stamps) being Botha's Company on the Black Reef with forty stamps and the Van Ryn Company with a like number. The Meyer and Leeb Company got to work on the Natal Spruit with ten stamps driven by a Leffel turbine. The various mills at work were crushing considerably under two tons per stamp per day, and the yield averaged 80s., the output being returned at 208,121 ozs. The Robinson Gold Mining Company had some fine returns during the year, one being on September when 128 tons yielded 3,296 ozs.

Difficulties of Transport.

The difficulties of transport, which at that time, and in fact until the railway opened in 1892 was entirely done by ox-wagon, were great, many instances being known of transport riders off-loading on the veld when bogged by the summer rains and returning for it the following winter. The rates for these heavy packages were excessive—35s. per 100 lbs. being a common one from Kimberley. The success attending the Californian mills induced the Langlaagte Estate Company and Robinson Gold Mining Company to decide on this type, the former with sixty stamps and the latter with forty. These were of what was known as the high bank type, the crushers being above the bins, classification over grizzles being done in the mill also. Both mills had Corliss engines 18 in. by 42 in., and the former started in February and the latter in April. It was at Langlaagte Estate that the first electric-lighting plant was installed, there being a Crompton dynamo of 300 volts, which charged a battery of accumulators in series and from which the current for the lamps was taken at about 50 volts. This plant only ran intermittently and was eventually pronounced a failure. An arc light was next tried in May at the old Globe Theatre. This was supplied from Bunsen batteries, and made such a noise that the performance was interrupted.

Electricity and Compound Engines.

In August, 1889, a successful 30-light installation was erected at the Knights Gold Mining Company. This was an Elwell Parker machine which supplied an arc on the headgear and incandescent lamps of 65 volts in the engine-room and shaft. Mr. Fillis was the next pioneer, as he imported a direct coupled Robey set for his circus, which was the first electric lighting plant in Johannesburg, and it started in September. Another small temporary plant for the contractor who was building the Stock Exchange followed in October, and the first permanent plant in town was started at the Wanderers in November, and consisted of a compound Robey undertype engined riving two Scott and Mountain dynamos. Other mining companies were installing lighting plants, the Jumpers having two 8-kilowatt sets in September and a similar plant in December. It is interesting to recall the prices paid for Edison swan lamps in those days: 60-volt lamps costing 8s., 110-volt lamps 12s. 6d., and 200 c.p. sunbeams about 30s. each.

Self-Dumping Skips and Cornish Pumps.

The Simmer and Jack had a self-dumping skip working on an incline headgear, and iron headgears began to make their appearance about this date, among them being the City and Suburban, Langlaagte Estate, Henry Nourse Deep-Level Company and the Wolhuter, many being 35 ft. high, while the two latter at any rate were provided with iron cages, having safety-catches of the well-known eccentric type. Pitch-pine for shaft-timbering cost in some instances 20s. per cubic foot. Cornish pumps had now been adopted in many mines and pulsometers at a few, one of the finest examples of Cornish pit-work being at the Wolhuter Mine.

Amalgamation Improvements.

One great idea prevalent about this time was that the plate surface was not sufficiently great for proper amalgamation, and many schemes to overcome this supposed deficiency were being tried. Among these were Thompson's conical table, tried at the National in 1889 and at the Pioneer in 1890, for which the pulp was led to the apex of a copper cone, and the double tables at the Northey mill in 1888 the system there being to have one plate directly over the other, the pulp being divided equally over the two.

S.A. Nickel and Talc Flotation.

The liberal measure of publicity enjoyed by the S.A. Nickel and Talc Flotation and the very attractive features of the scheme have resulted in satisfactory support from the investing public. The subscription list will close on March 31, and prospective investors should lose no time in sending in their applications, as the issue may be oversubscribed by then.

Air-Drills and Compressors.

It was only at the end of 1889 that attention began to be turned to air-drills, and in that year the Jumpers had a small Schram compressor of 2-drill capacity, followed shortly afterwards by the Robinson which had a small Robey compressor 14 in. by 24 in. and three Adelaide drills 3 in. diameter, as had also the Langlaagte Estate, the latter consisting of two Walker air-cylinders arranged tandem with the duplex steam cylinders of the Cornish pumping-engine. Many will remember the Standard mill in this year as being the first public crushing battery here. Tailings were altogether a nuisance, and many of the old houses in Johannesburg are literally plastered with gold, as the Worcester and other companies were glad to sell some of their rich tailings to builders and plasterers at 5s. a Scotch cart load. October saw the establishment of the Chamber of Mines, whose first report shows that the duty per stamp per day had risen to about 2½ tons with an average yield of about 70s., the total output for the year was 369,557 ozs. The number of natives employed in the Witwatersrand area was from 15,000 to 17,000, and the average monthly running time of mills on the Main Reef series was a shade over twenty-three days. The following year, 1890, saw new developments in compressor equipment, the Robinson Gold Mining Company ordering a duplex Rand Drill Company's machine of 20-drill capacity and 3½ in. Slugger and Giant drills, and similar plants followed soon after for the Crown Reef, Jumpers and Ferreira Companies. Other companies were also extending in this direction, such as the Gardner Main Reef, Stanhope, Geldenhuis, Geldenhuis Estate, and many others. Condensing had not then come into vogue, although advocated for small engines, as the circulating water required by them was just about the right quantity for the plates. There was, however, a jet condenser worked off the tail end of the tandem compound mill-engine at the Aurora Mine early in the year, and most of the new plants, including the Robinson compressor, were ordered with surface condensers.

Larger Mills and Separate Crushing Houses.

Many of the companies were continuing to find their prospects bright, and mills were becoming larger and were being placed as a rule close to the mine. The Jumpers dropped their 100 new stamps in January, and the striking feature was the use of a compound engine direct coupled to the mill line shaft, the engine being in the middle with 50 stamps on each side; in September the Simmer and Jack followed with 100 stamps almost similarly arranged to the Jumpers. The first attempt at a separate crusher-house was made at the Stanhope Geldenhuis, and the first mechanical haulage was put to work in this year at the Durban-Roodepoort. This was of the clip type, the clips engaging the rope underneath the axles and being automatically disengaged by a device invented by the Company's blacksmith. The haulage was used for bringing the tubs, which were of the square wooden variety common in collieries, out of the adit to the mill.

Tailings Elevators.

Tailings were giving considerable trouble at the older sites, and while the George Goch and Primrose Companies had attempted to elevate them by bucket elevators, the Crown Reef adopted solid plunger pumps, having tried bucket elevators as far back as 1888, and in October the Langlaagte Estate had Gwynne's centrifugal pumps which were placed over sumps in which the pulp was mechanically agitated, the tailings being elevated 25 ft. at a total cost of 2d. per ton. The Glencairn, however, used a coop wheel for the first time, which was driven from the end of the axle and was 16 ft. diameter, and had a dozen iron buckets or so fixed to the periphery. Another new device was the self-dumping skip at the Crown Reef vertical shaft which aroused considerable interest amongst local engineers.

The Diamond Drill and Cyanide.

While the first diamond drill borehole on the fields had been started during the previous year at the Village Main Reef, another was started in January, 1890, by the Henry Nourse Deep Level Company which went to a considerably greater depth—750 ft.—and which has to be recorded as being the first occasion on which the well-known Sullivan hydraulic feed drill was used here. As showing the position of affairs at this time the Princess Company, which was considered a leading mine, supplied their 30 stamp mill from two vertcal shafts and seven incline shafts, the latter being worked by whips and oxen, and the Directors expressed considerable surprise when a newly-appointed manager announced his intention of ultimately working the reef from the two vertical shafts only. Of course the most important event of the whole year in the light of later developments, and the fact that a 10 dwt. return would hardly pay was the experimental plant at the Salisbury Gold Mining Company to try the McArthur Forrest process. Demonstrations of its possibilities were made in June and July from which a return of 230 ozs. were obtained by the Gold Recovery Syndicate. The Salisbury Company then commenced working the process. The Robinson Company's works were started in December, the treatment tanks being rectangular, and filling was done from a top staging on to which the trucks were brought by rope haulage operated by oxen, and the discharging was done by shovelling over the sides of the Tanks. In July a Mining and Metallurgical Exhibition was held at the Crystal Palace in London in which Johannesburg had an exhibit which served to direct attention still more keenly on us. The output for the year totalled 494,817 ozs. from 1,345 stamps, the tonnage per stamp was approaching three, the yield had dropped to about an average of 50s., and the number of days milling per month had risen to 24¼ for those batteries working on the Main Reef and half-a-day less for the whole district.

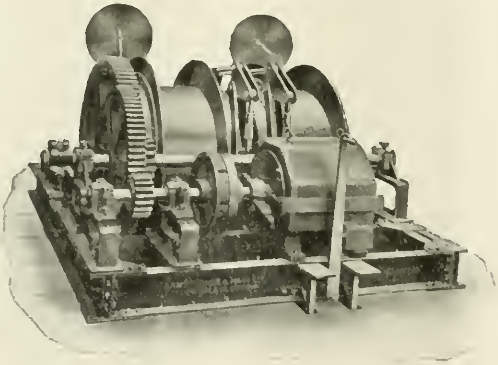
American Foreign Trade Convention.

The American Trade Commissioner, Mr. P. J. Stevenson, has been requested to announce that the Eight National Foreign Trade Convention will be held this year in Cleveland, Ohio, on May 4, 5, 6, and 7, 1921. The National Foreign Trade Council, under whose auspices the convention is held, is anxious that merchants, traders, and manufacturers from South Africa who expect to be in America should endeavour to arrange to be present. This meeting is attended by the leading American manufacturers, bankers, and exporters interested in overseas markets. It thus affords business men from other countries an excellent opportunity of meeting in one place a large number of representaoive American business men. The secretary of the Council, Mr. O. K. Davis, 1, Hanover Square, New York City, would be glad to furnish any additional information to those interested; or inquiry may be made of the American Trade Commissioner, Box 6989, Johannesburg.

A New Cinema Projector Lamp.

In practically everything but the searchlight and the cinema projector the electric carbon lamp has yielded place to the electric incandescent tungsten filament lamp of the gas-filled type, so called because the bulb is filled with an inert gas—generally the gas argon, whose existence was discovered by the late Sir William Ramsay. Now the supremacy of the carbon arc lamp in the projector field is being challenged by a special bulb lamp invented by a British firm in which the light is supplied by an electric arc between two small beads of tungsten. An intense point of light is thus obtained. Larger lamps are made with a square plate of tungsten (about half a square inch in area) which becomes white all over and produces a light of as much as four thousand candle power. Smaller sizes give five hundred and one thousand candle power. For cinema projectors and many other purposes these new lamps have many advantages over the old-fashioned carbon arc. They can be run off any electrical circuit, whether continuous or alternating.

ELECTRIC HAULAGE GEARS



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From the Journal of Thirty Years Ago.

WHAT THE "S.A.M.J." THOUGHT AND WROTE IN THE EARLY NINETIES—DEEP LEVEL SCEPTICS AND THE ROTHSCHILDS—THE HOUSE OF ECKSTEIN'S GROWING POWER—A PLEA FOR A LITTLE "HEALTHFUL COMPETITION."

The back numbers of this Journal may truly be termed the archives of the Mining Industry of South Africa. They contain its history in a wealth of detail such as is not to be found elsewere, and it is extraordinarily interesting to go back over the volumes right to the first publication in 1891 and to read therein of events which have helped to mould not only the fortunes of the mines but the destinies of a sub-continent.

Two articles picked at random from the earliest impressions of the paper are given hereunder and they serve to show the trend of technical and financial thought as expressed in the "Mining Journal" (then, as now, the official organ of the industry).

By the time this journal had established itself as the official organ and coadjutor of the mining industry on these fields, it had come to be generally accepted that the banket beds extended beyond and below the line of outcrop mines and that the first and even second and third rows of deep level properties would in the fulness of time be brought within the economic scheme of which Johannesburg had become the head and centre. Yet there were sceptics even as late as '92. We note, for example, in an issue of the journal early in that year the paper wrote of

"Deep Level Probabilities."

"It was with some surprise that we noticed the apparent want of faith which Mr. Carl Meyer showed in the future of deep level properties on the Rand, the more so as we were fully under the impression that the professional mining adviser of Messrs. Rothschild not only believed in their future, but had backed his belief in very substantial manner. However, assuming that we are mistaken in this, it is still remarkable, after all that has been written on the geology of the Witwatersrand banket formation, that so many sceptics, real or pretended, as to the continuation of the beds on the line of dip should be found. The great extent of practically unbroken line of reefs or banket beds on the line line of strike of the formation should in itself be sufficient of strike of the formation should in itself be sufficient assurance of its equally great extent proportionaoely on the line of likely to be seriously faulted. For ourselves, we strongly favour the basin theory, and believe that within a few thousand feet from the outcrop of the Main Reef series, the banket beds will be found lying flat at depths varying from 1,500 to 3,000 feet according as the beds have been more or less severely tilted."

The Growth of Eckstein's.

At that time the Corner House was increasing its assets, acquiring more ground, bringing new blocks of claims into the productive zone and preparing for the attacking of the deep levels on a large scale of exploitation. Then, as now, the firm founded by Hermann Eckstein controlled the bulk of the output, and it is at least worthy of note that even back in those days of early technical journalism in South Africa the "Mining Journal" exhibited some spirit of independence. It wrote, for instance under the heading of "The Financial Monopoly."

"The result of the City and Suburban meeting, reported in our last issue, on the 8th was unsatisfactory, inasmuch as no conclusive result was arrived at, but it is to be hoped that the necessary effort will be made to collect a sufficient quorum to pass some scheme of furoher capital issue, upon which the future successful conduct of the company will depend. The report of the meeting has afforded very instructive reading to the general public. The action of Messrs. Eckstein in waiving the option of the second issue of 5,000 shares was both graceful and wise as a concession to the wishes of the shareholders. Moreover, we are of opinion that shareholders will not apply for anything approaching the total issue open to them.

The Rand's Good Things.

This reference to the City and Suburban brings us face to face (admitting the fact that they are large and liberal in their views and honourable in their dealings) that the firm of H. Eckstein is getting far more than its fair share of the Rand's good things. It is becoming daily more powerful and all-controlling, and unless an element of sufficiently strong competition is introduced the entire Rand bids fair to become a department of the famous Corner House. This is not to be understood in any way as an attack on the firm. Nobody appreciates more than ourselves the substantial good that they have done to the district by attracting here the very best professional mining talent in the world, and by the prestige which their exploitation of the famous mines under their charge has given to the fields in general. The time has now come, however, when (as Mr. Carl Meyer said), the introduction of fresh blood and fresh capital (supplied by Messrs. Rothschild, for instance) would result in incalculable benefit to the district. We are now within measurable distance of the time when a second row of machinery will be at work upon the deep level propositions. The reef on such properties as the Nigel, Chimes, Modderfontein, Champ d'Or, Randfontein, Rietfontein, Orion, i.e., belonging to formations other than that of the Main Reef belt, are now proving themselves equal and in some cases superior to the later. Vast amounts of capital might be advantageously employed in proving and working their ex-

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tensions, now lying fallow, but affording every possible encouragement to the mining speculators. Besides, this capital will also be required for the many other auriferous regions in the Transvaal, such as the Zoutpansberg, Lydenberg, Kaap and Klerksdorp fields. Last but not least, State and Municipal Loans, and railway schemes will before long offer opportunities for the safe investment of very large amounts of capital. Under these circumstances we can do very well with at any rate one or two more firms of Messrs. Eckstein's standing, and a little healthful competition should mean a substantial increase in our rate of progression."

Competition and the Groups.

The "little healthful competition" which the "Journal" desired in those days has been well supplied of recent years, although the grip which the Corner House obtained of the good things of the Rand has never been relaxed. It has always been difficult to dissociate the great firm of Rothschild from some of the leading financial groups which have controlled the mining industry of South Africa. It is, however, clear that Rothschilds have in one way or another been associated with the Witwatersrand ever since its infancy, and we know that to-day that the great European banking house sells the product of our mines mainly to another great firm, Kuhn, Loeb and Co., of New York, and it is also understood that the Rothschilds have a large interest in a Far East Rand mine which lies to the south of the Modder group.

The element of healthful competition seems of recent years to have been well supplied by the Johannesburg Consolidated Investment Corporation and the Consolidated Mines Selection, whilst the Union Corporation has also managed to more than keep its end up, and the General Mining and Finance Corporation, the Gold Fields and the Anglo-French, despite possession of a number of poor mines, continue to contribute a not inappreciable quota to the gold harvest of these fields.

The house that was Eckstein has absorbed the East Rand Proprietary and the Neumann interests, and although it may not now be getting "daily more powerful and all-controlling" to the extent it was thirty years ago, it is still a great power in the land and a concern which has marketed more gold than any other corporation on earth.

Bechuanaland Asbestos Co., Ltd.

A KURUMAN VENTURE WITH GOOD PROSPECTS.

Elsewhere in this issue appears the abridged prospectus of a concern styled the Bechuanaland Asbestos Company, which has for some time past been exploiting crocidolite asbestos near Kuruman.

The Bechuanaland Asbestos Company (among the directors of which are Mr. H. C. Dunell and Mr. F. H. Holland—both of Dunell, Ebden & Co.), has been formed to take over from Messrs. Hector Gillanders and Edward Campbell, two former Port Elizabeth business men, asbestos mining interests, plant, general trading rights on mines, and merchandise in the Kuruman and Barkly West districts. The capital fixed is £150,000, made up of 60,000 vendors' shares; 25,000 held in reserve; and 65,000 now offered for public subscription. Of the latter, half the amount has already been promised, so that under 32,000 remain to be taken up. The total area available for mining is approximately 60,000 acres.

Messrs. Gillanders and Campbell have, for some fourteen years, been conducting mining operations on a restricted scale. For the last six years an average of 100 tons a month has been mined on the tribute system with native labour—of which there is an ample supply from the reserves in the immediate neighbourhood—but the method proving unnecessarily costly, machinery has been installed at one face. The result has been an increase of output to 250 tons per month, which could, with a small capital outlay, be increased to, say, 300 tons, while, as soon as development work has been sufficiently advanced, the output could be further materially added to.

The fibre mined is the purest blue crocidolite asbestos, which occurs only in the Asbestos Mountains and Kuruman Range. It is equal to the very best quality asbestos mined in the world.

A further fact to be borne in mind is that the vendors have secured the rights to the pick of the deposits from Kalahari right down to Barkly West, the supplies being unlimited.

In consequence of the expense of hand cobbing, thousands of tons of rich ore have, over the period of 14 years already mentioned, been cast aside as debris, but containing fibre suitable for asbestos cement, slates, and sheets (for which a huge demand for building purposes exists). Further fibrising plant is to be erected to deal more rapidly with this hitherto discarded asbestos, and although only partially installed, the crushing machines alone have already effected a saving in the production costs of £5 10s. per ton of fibre.

The output has been sold for months ahead at the best prices yet obtained for blue crocidolite fibre, so that it will be unnecessary to seek a market. The question of market in future should afford no anxiety, as according to Professor Hall's memoir, the asbestos roofing industry will require 75 per cent. of the world's total output.

Company Meetings and Reports.

Cassel-Transvaal Navigation.

At a special meeting of shareholders in the Cassel Coal Company, Ltd., the extraordinary resolutions passed at the meeting held on February 11, providing for the sale of the assets and undertaking to a new company to be formed and the placing of the company in voluntary liquidation, were confirmed as special resolutions.

* * * *

Transvaal Navigation Coal Estates, Ltd.

At a special meeting of shareholders in the Transvaal Navigation Coal Estates, Ltd., the extraordinary resolutions passed at the meeting held on February 11, providing for the sale of the assets and undertaking to a new company to be formed and the placing of the company in voluntary liquidation, were confirmed as special resolutions.

* * * *

South-Western Exploration Company.

The twelfth annual report (1920) of the South-Western Exploration Company states, inter alia: Your company holds an interest in Mynpacht Rights on portion of Rietvlei No. 113, as shown in the balance sheet. The Union Corporation, Ltd., have continued to make advances to your company to meet its requirements. The total indebtedness to that Corporation as at 31st December last amounted to £7,766 15s. 2d., and interest is payable thereon at the rate of 7 per cent. per annum. No work has been done during the year. From the balance sheet, which accompanies this report, it will be seen that the expenditure during the year amounted to £603 9s. 10d., of which £518 0s. 4d. represented interest on advances and £85 9s. 6d. administrative expenses, including auditors' fees.

SWAZILAND TIN.

The following are the results of the operations of this company for the month of February, 1921: Concentrate recovered, 28 tons; estimated working profit, £48; add adjustments in respect of previous shipments, £494; total profit for the month, £542. The above figures are calculated on a price of £135 per ton of metal. The concentrate has not yet been sold and sale is being delayed in the hope of a recovery of the metal markets.

A Pioneer's Recollections and Optimism.

AN INTERESTING LETTER FROM MR. W. P. TAYLOR—THE LAND OF SUNSHINE AND GOLDEN MORROWS—A TRIBUTE TO THE "MINING JOURNAL."

We are glad indeed to publish the following note of recollection and optimism from one of the best known of the Rand Pioneers, Mr. W. P. Taylor, and we are grateful to him for the kindly tribute which he pays this paper. Mr. Taylor has for many years been intimately connected with the mining and agricultural industries of this country, and only a few weeks ago he presided at the annual gathering of the Rand Pioneers, that Association of old timers who have so largely helped to make these gold fields the greatest in the world.

In this article Mr. Taylor recalls the early days, when every man looked forward to a golden morrow. Conditions to-day are in many respects depressing, but, like every man who has lived most of his years in and with South Africa during the last three decades, Mr. Taylor is still an optimist. He believes in the aureate dawn and in the untold and unknown possibilities of this country and in the ability of the young blood of South Africa to carry on with the development of the Union at the point where their fathers laid the task down.

1891! Thirty years ago the Rand was still in its infancy, in fact, it was just being discovered by the great financiers of the world and the controversy of its extension, beyond being a little basin of some twelve miles in extent was being upset. At that time it was felt that there should be a mining journal to be to all intents and purposes a paper devoted to mining and for the thirty years the journal has fulfilled its purpose, and I heartily congratulate it upon its long role and its present position in the forefront of South African mining information.

To speak of 1891, the year of its birth, takes one back to a time when our hearts were young and big and our thoughts were ever full of hope—we lived in days when the unknown reigned supreme.

The Epoch of Golden Morrows.

The advent of new discoveries and manipulations brought speculation, and every man looked forward to a golden morrow. The basis of dealings were still on wide margins and the day of the tickey-snatcher had not begun and in such an atmosphere of anticipation the journal came into birth. Of the men who read its first issue many are no more—old Stock Exchange men will remember Jack Spreckley and Coffy Adams, who were my representatives in the early days and who died for the flag in the Boer War—and Rhodes, Alfred Beit, Barney Barnato, Sir Sigmund Neumann, were all active operators in those days. The old crowd that had foregathered here in 1887 had not yet split up and spread over the world. We were not yet strangers to one another, money was plentiful and the prospects good.

The Optimism of a Pioneer.

Contrast it with to-day. You cannot at the moment, for war has cast its mantle of gloom over humanity, and shadows still pass slowly over our golden sunshine. However, here we are all thirty years older, but are we downhearted? NO, for here is the sunshine and here is the land. We still sleep securely under the great flag of freedom. We know, at least, all the old hands know, that there are untold and unknown possibilities in this country. Many of us are too old to try to develop them; but they are there, and if the old blood dies away, the younger generations will do their duty, and in time the same thoughts that filled men thirty years ago will stimulate them in the brighter days to come, when, with peace throughout the world and unity on the spot, the riches of the land will be developed and long may the "Mining Journal" continue to record the progress of the country and its sons.

W. P. TAYLOR.

A GROUP OF PIONEERS OF THE TRANSVAAL GOLDFIELDS. PHOTO TAKEN AT THE INAUGURAL MEETING OF THE '87 PIONEERS OF THE TRANSVAAL GOLDFIELDS, PRESIDED OVER BY MR. W. P. TAYLOR.

Working Costs of Thirty Years Ago and To-Day.

TENDENCY TO DECREASE EXPENDITURE ARRESTED BY THE WAR—WHEN THE ROBINSON MINE SPENT 72s. 1d. PER TON—OUR BIG INDUSTRIAL PROBLEM—SOME INSTRUCTIVE FIGURES.

In our last issue we dealt at length with the subject of working costs and the imperative necessity that exists for an early and substantial reduction of the expenses of mines. Both the present prosperity and the future continuance of the gold mining industry of the Rand are largely dependent upon the cost of winning ore from underground and extracting the gold from the ore on the surface. The industry is being crucified to-day upon a cross of high costs, and it is plainly evident that if we are not to witness the closing down of a number of mines expenses will have to be reduced to a level which will admit of the low-grade ventures working at a profit.

It is interesting in this thirtieth anniversary number of the Journal to look back upon the costs of the early days on these gold fields and to see how their gradual reduction was affected.

The incidence of the War and of its far-reaching effects has nullified the work of 20 years. Expenses to-day are higher than they were in 1902, when the Rand was recuperating from the disorder and chaos of the Anglo-Boer War, and the grade has fallen from 10 to 6½ dwts. during that period. The gold "premium" alone affords salvation, and it is imperative that we so set our industrial house in order that the Reef can maintain its status as the leading gold field of the world, even although the selling price of the Rand's product drops back to normal.

In the early days of the Witwatersrand working costs were very high. When the first mills began to crush the outcrops of the Main Reef series and to recover from this free milling ore the gold that frequently gave a return of an ounce per hundredweight, expenses of £3 per ton milled were not considered inordinate.

In those days, now a third of a century distant, the Witwatersrand was isolated from the rest of the industrial world, transport charges were enormous, the cost of supplies would be considered excessive even at the present day when the War and its aftermath have raised prices by anything from one hundred to two hundred per cent. or more, and as in all new and isolated mining fields men demanded high wages and got them, although rampant trades unionism was unknown in those seemingly far away times.

The Founding of an Industry.

But gradually Johannesburg became an established community. Transport services improved and later railway systems converged on the capital of the new gold fields.

The methods and inventions of other fields were brought into the expanding industrial arena. Labour-saving appliances were introduced. Judged by present-day standards, most of those devices would be considered crude indeed, as witness, for example, the weird and wonderful rock drill employed some time after the earliest epoch of the Rand and which may at the present moment be seen at the Mining Exhibition, which is being held in the Amalgamated Scientific and Technical Societies Club House in Fox Street.

Labour-saving Appliances.

But the introduction of mechanical devices coupled with the better economic conditions which resulted from the establishment of the Witwatersrand as a gold field with a long life played their part in making what is in reality a low-grade proposition a profitable one to work.

In 1888, working costs at the Robinson mine were 72s. 1d. per ton; in 1891 they were 41s. 4·7d.; in 1898, 25s. 2d.; in 1908, 12s. 7d.; in 1910, 12s. 2d.; and in 1911, 14s. 8d. In 1897, the average working costs of twenty-eight companies were 27s. 1d. per ton; whereas in 1909, the average of the whole Rand was 17s. 3d. For 1911 the average of the Rand was 18s. When it is remembered that this is, on the whole, a low-grade mining field, it will be understood what immense tonnages of ore this reduction in working costs has made available for profitable exploitation, which, otherwise, would have had to remain unworked. The old pioneers tell us that no ore under an ounce per ton was thought anything of in the early days. Now we are thankful for five or six pennyweights, and one or two mines have made a profit on an average recovery of four pennyweights. The lowest working costs on the Rand have been secured at the Knights Deep mine, where in 1911 727,830 tons were dealt with at an average cost of 11s. 2d. per ton.

EN ROUTE TO THE GOLD FIELDS IN THE PIONEER DAYS.

A Valuable Contribution.

Writing on the subject of Rand working costs in the twenty-first anniversary number of this Journal, published nine years ago, Professor J. G. Lawn, C.B.E., remarked:

"Looking at the cost of working mines over a long period of time, a tendency to increase is universal, owing to the increase in the value of human labour, or, to put it another way, owing to the decrease in the purchasing power of money. Thus it is evident that the cost of working mines in Cornwall in the time of Queen Elizabeth, when tinners received twopence per day, must have been very low. Indeed, working costs in Cornwall have probably never been higher than they are to-day. Illustrations of this general tendency might also be drawn from coal mining in Great Britain. It is true that improvements in plant and methods, to some extent, counterbalance this tendency, and, in particular cases, they may more than counterbalance it; but, generally speaking, the tendency is marked. When, however, a new mining district is discovered, there are often circumstances which make working costs enormously high to start with. Thus the district may be inaccessible and transport costly; it may be very sparsely inhabited, so that a mining population has to be attracted to it; it may be unhealthy; or the ores may be difficult to treat by known methods. However, if the deposits of mineral are sufficiently rich, all difficulties are overcome one after the other, and working costs gradually come down year by year until something approaching a stable figure is arrived at."

The Shadow and its Reality.

When Professor Lawn penned these lines the tragedy of the Great War was only a shadow which now and then flitted across the world and darkened the sky of civilisation. Clouds rose, but they were quickly dispelled. Authorities told us that Armageddon was, or should be, a myth. But the blow fell, and ever since the outbreak of the War the tendency of working costs not only on the Witwatersrand but on mining fields generally, has been upwards. We have in many issues dealt at great length with the various causes which have combined to make the Rand an industrial area of high operating charges and a mining field which is merely subsisting on that ephemeral thing known as the gold premium.

How Costs Have Risen.

There is no need further to labour this economical tragedy here. We will merely remark that in January of this year working costs on the Rand were 26s. 3d. per ton. For the year 1914 they were 17s. 8d.; by 1918 they had risen to 21s. 7d.; and since then they have increased by 25 per cent. In February, on account of abnormal circumstances, they were much higher.

The Peak of High Costs?

One can only hope that February registered the high peak of expenses, for last month some of our mines reverted to the working cost figures of thirty years ago. The price of commodities and the cost of wages is apparently falling all the world over, and there should be no reason why these circumstances should not react on the Rand and once again make it possible to snatch a profit from five dwt. ore, even if gold comes back to normal. We should like to see the Rand repeat its earlier achievements in this respect.

What the Robinson Achieves.

The Robinson, once the show mine of the Reef and now a declining old venture with only the gold premium to console it in its dotage, reduced its working expenses bills from 72s. 1d. per ton in '88 to 11s. 5d. in '95, and 25s. 2d. in '98.

We should like to see something of this kind transform the Reef during the next few years. We should like to witness a big decline in working expenditure, not only in and on the mines but in the head offices as well.

The Road to Economic Salvation.

For in this direction lies salvation. Otherwise we shall soon revert to the industrial status of 1891, the year in which the *Mining Journal* made its first appearance and wrote enthusiastic articles about an output of less than one hundred thousand ozs. per month. Such a return signified prosperity thirty years ago. But the Rand has vastly more mouths to feed to-day, and if through inability to reduce working costs the Reef can not achieve a vastly better showing than it did in its earlier days the result will be appalling poverty and widespread unemployment. *The Rand must reduce the working costs of its mines.*

S.A.R. Progress.

Sir William Hoy's monthly review of railway affairs is always of interest and value. In his latest, he writes, inter alia:—Goods and mineral traffic is heavy, and at the time of writing is on the increase. The traffic now moving in considerable volume is, however, principally low-rated traffic, general merchandise having decreased with a resultant shrinkage in revenue. Imported cargo is falling off. The curtailment of imports, which is reacting on railway earnings, may be regarded as a natural corollary of the trade uncertainty through which the commercial community is passing. There is a slightly keener demand in the wool trade for superior clips, and there appears to be reasonable prospects of a general improvement in the market. Large quantities of wool and maize have been held up at inland centres in anticipation of a rise in values, but the recent reduction in sea freights has revived maize export. The bunker and export coal trade has been well maintained, but there are indications of increased competition from Europe as a result of the larger quantities of coal available for export by reason of the curtailment of industrial work in Europe. An early improvement in industrial and trade conditions in European countries is foreshadowed, and this should react favourably upon trade conditions in South Africa. Meanwhile, local merchants are carrying large stocks and indenting has been suspended or much curtailed. We are passing through a period of readjustment which is bound to affect trade, but as values become more stabilized more favourable economic conditions should again prevail. Grain crops in the Western Province, particularly in the Malmesbury and Moorreesburg districts, have been considerably above normal, and the cotton crop in the Northern Transvaal will be exceptionally heavy if favourable weather conditions continue. Prospecting for coal and oil shale is proceeding on a considerable scale in the Transvaal. Samples of shale which were analysed are said to contain a high percentage of petroleum. A large number of live stock has recently been trekked to Komatipoort Station from Swaziland, where several ranches now carry large herds. The Cato Ridge-Clairmood deviation on the Natal main line between Durban and Maritzburg has been partially opened for a limited goods train service, with very satisfactory results. Approximately £2,500,000 has been spent on the Natal main line since Union, and approximately £385,000 in providing improved facilities for dealing with coal shipments at the Bluff, Durban.

Transvaal Chamber of Mines Annual Report.

We have received the annual report of the Transvaal Chamber of Mines, which as usual contains much interesting matter. A review is unavoidably held over till next week.

* * * *

Another Silver-Lead Enterprise.

The Machadodorp district is the scene of the latest silver-lead discovery, and excellent assays are said to have been made from the samples. The property is in strong hands, and the public may later on be asked to participate in its financing.

* * * *

Modder B.: Reef Cut in the South-West Shaft.

Some time ago the Modderfontein B. Company initiated a policy of exploiting the deeper levels of the property by means of two new shafts.

It is now officially announced that The Main Reef Leader was struck in the South-West Shaft on the 12th instant, at a depth of 1,488 feet.

The following is from an average of eight sections taken round the shaft:—

Reef width: 13.9ins.
Value: 29.1 dwts.—405 inch dwts.

The last annual calculation of ore reserves was based on a width of 63 inches, and application of this factor to the inch-dwts. given above would give an assay value over a stoping width of 5 feet 3 inches of slightly under 6½ dwts. per ton.

The South African Association for the Advancement of Science will meet this year at Durban, under the presidency of Professor J. E. Durrden, M.A., Ph.D., during the week commencing July 11th. A large number of scientific papers will be read by the leaders of scientific thought of the sub-Continent, and there is every prospect of the meeting being as successful as those which have preceded it at Bulawayo, Kingwilliamstown and Johannesburg.

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ENGINEERING SECTION.

Pioneer Views on Electrical Power Stations.

PIONEER VIEWS ON ELECTRICAL POWER STATIONS—WHAT THE "MINING JOURNAL" ADVOCATED THIRTY YEARS AGO—A PROPHECY OF THE EARLY NINETIES.

It is interesting to note that in the beginning of the 'nineties the "South African Mining Journal" held strongly to the view that large joint power projects would greatly conduce towards the reduction of the working costs if such an undertaking could be initiated on the Rand in "the not far distant future." Just on thirty years ago we find this in the columns of the paper: "We believe that the time is not far distant when either electrical power companies or gold mining companies themselves, combined together in sections, will find it eminently advantageous to erect electrical power installations. The object of these electric power stations would be to supply electric power to companies working gold mines for one or two miles on either side of them. The power thus generated would be employed for driving hoists, pumps, haulage engines on tramways, rock drills, etc. The direct economic advantages of such installations would be, first, that with electric transmission of power there is a direct efficiency of from 50 per cent. to 70 per cent., whereas with compressed air, for instance, the efficiency is not more than 25 per cent. to 30 per cent. The efficiency of a central electric system for the development of this electric energy would also be at least twice as great as that developed by separate small plants of from 10 to 20 h.p. with inferior engines and boilers. Companies using electric motors would also be able to save largely in labour, since one engineer would only be required for hoisting engines, and there would be no carting of coal to separate small plants. It might even be found advantageous to drive large stamp mills of 50 to 100 head by electric power, and thus save labour of a number of stokers at the boilers. We would refer our readers to Mr. Hubert Davies' interesting article on the transmission of power, appearing in the journal on January 30 and February 6 for further corroborative evidence on this most important subject. Such a scheme would, we believe, be the means of effecting a very considerable reduction in the working expenses."

The journal had to wait fifteen years to see a consummation of the project which it advocated away back in the dawn of the gold industry A decade and a half elapsed before the various power schemes inaugurated for the Rand were incorporated in that misnamed undertaking the Victoria Falls and Transvaal Power Company, which sells its current along the Reef to-day. But the paper's prophetic instinct in this, as in other matters, has proved to be a correct one, and it is satisfactory to note that in present-day times the "Mining Journal's" advice in regard to important industrial matters has been acted on almost immediately.

PROGRESS OF THE RAILWAY WORKSHOPS.

£1,100,000 Improvements in 1920-21.

The South African Railways and Harbours Administration possesses some of the finest engineering shops in the country, and the total value of their annual output runs into big figures Improvements in these shops are steadily proceeding, but have been hampered by the fact that the necessary materials and machinery have been arriving very slowly.

Reviewing the improvements in hand, the General Manager of Railways says, in his latest report, that the new locomotive erecting and boiler shops at Salt River are practically completed and the new overhead electric cranes have been installed. The new springsmith's shop, pattern shop, electrical workshop, and castings dressing and white metalling shop have been completed, while the new steel underframe shop is in hand. The extension of the tube shop has been completed and the extension of the smithy shop and foundry are in hand. A new points and crossing shop has been authorized at an estimated cost, including equipment, of £15,000, and an extension of the erecting shop at a cost of £25,000.

At Uitenhage a new steel underframe shop has been authorized at a cost of £12,000, and the wagon repair shop at East London is being extended.

The extension of the erecting shop at Durban has been completed and the extension of the locomotive machine shop is nearing completion. A wheelshop has been authorized for Durban at a cost of £10,500, and £17,000 has been authorized for extensions to the Pietermaritzburg workshops.

The construction of the new workshops at Bloemfontein is being proceeded with.

Work is in hand at Pretoria on a new steel foundry, a new smithy, and the remodelling of the machine shop. A new boiler shop has been authorized at Pretoria.

The 1920-21 programme in respect of workshop improvements and machinery provides for an expenditure of £470,670. Works had previously been sanctioned, but not carried out, to the value of £650,819, so that improvements are in hand or contemplated to the value of £1,121,489.—"Journal of Industries."

The Continuous Centrifugal Process.

By the present methods and practice in the best equipped mills 20 per cent. less sugar than is contained in the juice when it leaves the crushers is actually recovered. This loss is caused by inversion and fermentation. Moreover, there is a considerable loss in the filter press process. Part of the sugar lost by inversion is recovered as molasses, which is a very much less valuable product. The loss caused by fermentation is irrecoverable as the sugar contents of the fermented juices are dissipated as vapour in the boiling process. The scums and filter residues are also total losses.

The new process for the purification of sugar-mill juice was developed by Mr. Mauss, whose permanent co-operation was secured by the Continuous Centrifugals, Ltd., of Johannesburg. In this process the suspended matter is separated out by centrifugal force. This idea, of course, is not new, but the practical success of Mr. Mauss's machine lies in the fact that it does the work continuously and automatically without the assistance or interference of hand labour.

The separation of the suspended impurities is, however, only one step towards the complete clarification necessary before the juice can be boiled into a syrup, as there still remain the impurities in solution and all the colloidal and albuminous matter. These are precipitated by dioxide and hydrate of lime and by heating. This treatment coagulates these impurities into a slimy mud. The old process to separate this mud is a very dirty and expensive one, as the mud has to settle down in tanks, after which the clear liquor is decanted In the new process the cold juice coming from the centrifugal separators is sulphured, limed, and heated in the ordinary way to "cracking" point, and then immediately passed through a vacuum filter. The liquid is sucked through the filter under a vacuum of not more than 15 inches (mercury gauge). The atmospheric pressure forcing the juice tthrough the filter cloth is, therefore, kept below 8 lb. per square inch, so that there is no danger of the mud being rammed into the cloth (and often right through) as happens with the ordinary filter-press.

The great advantage of this process appears to lie in its rapidity and continuity. The juice is not left at rest for a single minute from the time it leaves the mill until it emerges from the evaporators as a concentrated syrup. Thus the loss caused by inversion and fermentation is reduced to an absolute minimum From the time the raw juice leaves the mill till it enters the evaporators only thirty minutes elapse

Other advantages are cleanliness, the meaning of which will probably be realized only by those who have to do the work; reduction in cost; saving of labour; and the small mechanical power required, as 35 to 40 h.p., is stated to be quite sufficient to work the whole clarification department of a factory producing 100 tons of sugar per day. The saving in heat will also be considerable owing to the entire absence of the settling tanks and their large radiation surfaces.—W. de R. in the "Journal of Industries."

Submersible Motor-Pumps.

FOR MINING WORK.

During and since the war much interest has been shown in a novel form of combined electric motor and centrifugal pump which was found very useful not only by the British Navy, in which every ship was fitted with one or more of the pumps, but also by the American, French, and Japanese for emergency pumping and marine salvage purposes. This pump is made by Submersible Motors, Ltd., of Southall, Middlesex, who are the patentees and sole makers.

The unique feature of this apparatus is the electric motor, which is designed to work actually in water, and this is achieved not by attempting to keep water out of the motor, as is the case in watertight motors, but by a special method of insulating the coils which renders them impervious to wet. Water is actually circulated through the interior of the motor in direct contact with the windings, and is made use of for cooling purposes, thus materially reducing the size and weight of the unit. It will therefore be seen that the motor is especially adapted for use in wet places where an ordinary electric motor might run risk of breakdown.

The motor is of the induction type, with short-circuited rotor, so that there are no moving contacts or brushes employed.

The steel laminations forming the stator and rotor cores are coated with a waterproof varnish, assembled while the varnish is still wet, and subjected to heavy pressure so that the whole core becomes a solid mass. It is impossible for water to penetrate between the laminations and set up rusting.

Protection from Rust.

The interior surface of the stator and the external surface of the rotor after being ground are coated with zinc by an electro-galvanising process which effectually protects them against rusting. The shaft of the rotor is of manganese bronze and runs in roller bearings with a ball-thrust bearing. These are enclosed in gun-metal housings closely packed with grease and provided with special devices for preventing water obtaining access to the bearings, and also for ensuring that the housings are kept full of grease. The stator coils are wound through slots in the core, no other insulation being employed than that on the conductor itself. The ends of the stator windings to which connection is made are brought out from the motor case through a water-tight gland, enclosed in armoured rubber hose, for a length of about 50 feet, and terminate in a specially designed water-tight cable coupling

The stator coils are held firmly by brass clips covered with vulcanised rubber When used in conjunction with a centrifugal pump, the latter is bolted to one end of the motor casing, the pump impeller being fitted on an extension of the rotor shaft. The water circulation through the motor is shown in the illustration. Several of the largest ships in the Navy were saved by submersible motor pumps during the war after being damaged by gunfire or torpedo attack, and altogether many thousands of tons of shipping were salved by their aid. Large numbers were employed when clearing the wrecks on the Belgian coast, and extensive use was made of them when raising the block ships Iphigenia and Vindictive, particularly on the latter ship.

Since the War the submersible motor pump has been adopted most successfully for mining work, and as its advantages are recognised it is coming rapidly into favour. The compactness of the unit and the facility with which it can be handled and moved about, and the ability to dispense with lodge rooms, render it specially suitable in sinking operations, dewatering flooded workings, and coping with the sudden inrushes of water.

For the past eight months pumping operations have been carried out at the Pengam Colliery in Monmouthshire with a 6in. single-stage pump worked from a portable oil-engine driven generating plant. For the greater part of this time the plant has been at work for 24 hours per day, and latterly having mastered the inflow of water, for 12 hours per day, During the whole time the motor has been working submerged and has only been raised for examination on two occasions, when everything was found to be in excellent condition.

RAND WATER BOARD
(6 Per Cent.) STOCK, 1950.

(Issued by the Rand Water Board under powers conferred by Act No. 19 of 1914 (South Africa), and subject to the provisions of the Board's Statutes.)

PRINCIPAL repayable **at par** on the 30th June, 1950.

ISSUE PRICE—£97 10s. 0d. per **£100** Stock.

INTEREST at 6 per cent. per annum, payable half-yearly, on the 1st January and the 1st July in each year.

(*The yield from the Stock on the above terms is equal to* £6 3s. 8d. *per cent. per annum, allowing for redemption at par in* 1950).

The Rand Water Board gives notice that it is prepared to receive applications for the above-mentioned Stock, free of exchange, at all the South African Branches of—

The National Bank of South Africa, Ltd., and
The Standard Bank of South Africa, Ltd.

Prospectus and Form of Application

and any further information which may be required regarding this issue of Stock can be obtained from the Secretary, Rand Water Board, P.O. Box 1703' Johannesburg, or at any Branch of the above-mentioned Banks.

The Week in the Sharemarket.

LIQUIDATION STILL IN PROGRESS—THE MODDER EAST DEBACLE—THE "WAITING GAME."

The market goes from weakness to weakness, and bad news follows bad upon the heels of bad news. Modder East provided the sensation of this week, and collapsed on whispers about the debentures. The matter is dealt with in another part of this issue, and the only point to be made here is that before the Stock Exchange Committee allows debentures to be quoted, it should carefully scrutinise and make public all the terms of the debenture trust deed. Other gold shares remain in the doldrums; diamonds are a trifle harder at bottom prices, and tin shares are dead for the time. African Oils are firm and one of the few bright spots in the market

Latest London Gold and Market Quotations.

London, 4.20 p.m., Wednesday, 16th March, 1921. Gold, £5 5s. Sellers: Modder Easts, 17s. 6d.; Brakpans, 50s.; De Beers Deferred, £10 10s.; Crown Mines, 38s. 9d.; City Deeps, 40s.; Gedulds, 45s. 6d.; Anglo-Americans, 21s. 9d

	Fri., Mar. 11th.	Sat., Mar. 12th.	Mon., Mar. 14th.	Tues., Mar. 15th.	Wed., Mar. 16th.	Thurs., Mar. 17th.
Anglo Amer. Corp.	18 3	20 4½	21 6	21 3	21 3	21 0*
Apex Mines ..	7 0†	—	7 0†	—	7 0†	6 9
Bantjes Cons. ..	4 1*	4 1*	4 1	—	4 0*	4 0*
Brakpan Mines ..	50 0*	50 0*	50 0*	51 0*	50 0*	51 0*
Brick & Potteries ..	4 6*	4 6*	4 6*	4 6*	—	—
Bushveld Tins ..	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Cinderella Cons. ..	2 3*	2 3*	2 6*	2 6*	2 6*	2 6*
City & Suburbans ..	6 0*	6 0*	—	—	—	6 0*
City Deeps ..	39 6*	40 0*	40 3*	40 6*	40 0*	40 6*
Clydesdale Colls. ..	27 0†	27 0†	28 0†	27 0†	27 0†	—
Cons. Diamonds ..	12 6*	13 6	14 0*	13 3*	13 6	13 0*
Con. Investments ..	25 0†	—	25 0†	25 0†	25 0†	25 0†
Con. Langlaagtes ..	10 0*	—	—	11 9*	—	—
Con. Main Reefs ..	10 6*	10 6*	10 6*	—	10 3*	10 3*
Con. Mines Selection	17 6†	15 0†	15 0†	15 6†	15 6†	15 6†
Coronation Freehlds	1 2†	0 9*	—	—	—	—
Crown Diamonds ..	3 0	3 1	3 1*	3 0*	3 0*	3 1*
Crown Mines ..	38 0*	—	—	—	—	38 0*
Daggafontein Mines	3 1*	3 3*	3 3*	3 3*	3 3*	3 3*
Do. Options ..	—	0 3†	—	—	—	—
Durban Rood. Deeps	3 0†	3 0†	—	3 0*	3 0†	3 0†
East Rand Coals ..	—	—	—	—	1 11*	2 0*
East Rand Deeps ..	0 6*	—	—	—	—	—
East Rand Props.	—	—	5 0	5 9†	4 6*	—
East Rand Debs.	£71†	—	—	—	—	—
Eastern Golds ..	0 6†*	0 6*	0 6*	0 6*	0 6*	—
Frank Smith Diam.	2 2*	2 4*	2 6*	2 8*	2 8	2 9
Geduld Props. ..	45 9	46 3*	46 9*	46 6*	46 6	47 0
Glencairns	—	—	2 0*	2 0*	—	2 6*
Glencoe Collieries	11 0*	11 0*	11 0*	—	10 6*	10 6*
Glynn's Lydenburgs	—	—	10 0†	10 0†	10 0†	—
Government Areas	77 3	78 0	77 6*	77 6	77 6	78 3
Hume Pipes ..	21 0*	22 0†	22 0*	20 6†	20 6*	20 0†
Jupiters	3 3*	3 3*	3 6	3 3*	3 3*	3 3*
Klerksdorp Props ..	2 3*	2 3*	2 3*	2 3*	2 3*	—
Knight Centrals ..	3 3*	3 3*	3 3*	3 3*	3 3*	3 6
Knights Deeps ..	12 9*	13 0*	13 0*	13 0*	13 0*	13 0*
Lace Props. ..	8 6*	8 6*	8 9	8 9*	8 6*	8 3
Leeuwpoort Tins ..	7 0*	7 0*	7 0*	7 3	7 0*	7 0*
Lydenburg Farms	—	—	—	5 0*	5 6	—
Meyer & Charltons	82 6	85 0†	—	—	—	—
Modder B.'s ..	25 6	26 6	26 0*	26 6	26 0	26 6
Modder Deep ..	40 0	40 6	—	40 6	40 3	40 6
Modder Easts ..	17 7½	17 9*	17 4½	15 3	15 3	12 0
Do Options (4 yrs)	1 0†	0 9*	0 7*	0 6	0 5	0 3*
Natal Navig. Col.	34 0†	32 3*	32 3*	32 0*	—	—
National Banks .	—	£11½†	£11½†	—	—	—
New Eland Diam.	15 0†	16 0*	16 0*	16 0*	16 0*	18 0A
New Era Cons. ..	7 0*	6 6*	—	7 3†	—	—
New Heriots .	—	9 0*	—	—	—	—
New Kleinfonteins	5 0	5 0*	5 0	5 6	5 0	5 0
New Modderfonteins	64 0	64 9	64 9	4 3*	64 0	66 6
Nigels	4 0*	4 0*	4 0*	4 0*	—	—
Nourse Mines ..	7 0*	7 0*	7 0*	7 0*	—	7 0*
Premier Deferreds..	—	—	—	—	85 0*	—
Premier Preferreds	126 6†	—	95 0*	—	105 0*	105 0*
Pretoria Cements ..	52 0	55 0	55 0	52 6	52 3	53 0*
Princess Estates ..	0 7*	0 9†	0 6*	0 7*	0 8	0 8*
Rand Collieries ..	—	1 0*	1 0*	1 6†	—	—
Rand Nucleus ..	—	0 9*	0 9*	—	0 9*	0 9*
Randfontein Est. ..	13 0†	12 0*	12 9*	12 9*	12 3*	12 0*
Roberts Victors ..	4 6*	5 3*	5 6*	4 6*	5 3*	4 6*
Rooibergs	3 0*	3 0*	3 0*	—	3 0	3 0*
Roodepoort Uniteds	0 9†	0 9†	—	—	—	0 9†
Ryan Nigels ..	4 0*	4 0*	4 0*	4 0*	4 0*	4 0*
S.A. Breweries ..	—	27 6†	—	27 0	—	—
S.A. Lands ..	4 0*	4 0*	—	—	4 1*	4 0
Springs Mines ..	32 0	32 9	33 0	32 0	31 6*	32 3*
Sub Nigels ..	10 9*	11 0	10 11*	11 0*	11 0*	11 3
Swaziland Tins ..	—	—	—	—	—	5 0*
Transvaal Lands ..	—	18 0*	18 0*	—	18 0*	18 0*
Van Ryn Deeps ..	64 0	64 0	64 3	—	63 9	64 6
Village Deeps ..	7 0	7 6†	7 0*	7 0*	7 0	6 0*
West Rand Cons. ..	—	—	—	2 6†	—	—
Western Rand Ests.	2 6*	2 9*	2 9†	2 9*	—	2 9*
Witbank Collieries..	42 6*	42 6*	42 6*	42 0*	42 6*	42 6*
Witwatersrands ..	—	—	—	11 0*	11 0*	—
Wit Deeps ..	—	6 6*	6 6*	6 6*	6 6*	7 0
Wolhuters	3 6*	3 7*	3 9*	3 9	3 10*	3 10*
Zaaiplaats Tins ..	—	3 0	2 6*	2 9*	2 9*	2 9*
Union 5 per cent. ..	£95½*	£96*	£95¾*	£96	£96*	£96½
New State Areas ..	22 6*	—	22 6*	22 3*	21 9*	—
Rouxvilles	5 3	5 3*	5 6*	6 0*	6 3†	6 9*
S. Van Ryn ..	5 0	5 3	5 3*	5 0*	5 0	—
S.A. Townships ..	10 0†	10 0†	10 0†	9 3*	10 0†	—
S.A. Alkali ..	20 9*	21 6	21 6	20 9*	20 6*	20 0*
Do. Options ..	4 9	5 0	4 9*	4 0*	5 0	—
Transvaal Silvers ..	26 9*	26 6	27 0	26 6*	26 6	25 6*
Trans.-Delagoa In.	48 0*	—	50 0*	—	50 0*	50 0
Victory Diam. ..	0 3†	0 1*	—	—	—	—
Van Dyks	1 6*	—	—	—	—	—
West Springs ..	14 6	14 6	14 6*	14 9	14 6	14 6
Do. Options ..	0 6*	0 7*	0 6*	0 9	0 8	0 6*
Union Corp. ..	16 6*	—	16 0*	16 0*	16 3*	16 6*

*Buyers. †Sellers. A ex London.

"THE MINING MANUAL."

We have received a copy of the "Mining Manual and Mining Year Book" for 1921 (35th annual issue), by Walter R. Skinner. This reference work deals with mining and kindred companies operating in all parts of the world. This year's issue contains particulars of 1,430 mining companies—gold, diamond, silver, copper, tin, iron and coal—also exploration and mining investment companies, arranged in alphabetical order. The particulars given of each company include the directors and other officials, date of establishment, seat of operations, description of the property, with the purchase consideration, plant erected or in course of erection, present working results, ore reserves, details of capital, calls, dividends paid, and the financial position as disclosed by the latest accounts. Highest and lowest prices of the shares for the last three years, also latest price. Lists are also given of the officials connected with the companies, and these comprise 3,530 directors and 952 mining and consulting engineers, their addresses and the names of the companies with which they are connected. Other useful features of the book are the supplementary index of private, dormant concerns or companies which have ceased to be of public or market interest; crushing tables and outputs from the principal gold mines, showing tons treated monthly, results obtained and yield per ton; also annual yields and dictionary of mining terms by the use of which mining developments can easily be followed. A list of manufacturers and exporters of mining machinery is also included. The book is priced at 27s., and can be seen and obtained from Hortor's, Ltd., Harrison Street, Johannesburg.

RHODESIAN SECTION.

A Year of Rhodesian Mining.

The fortunes of Rhodesian mining during 1920 are reflected in the annual report of the Rhodesia Chamber of Mines, which reached us this week. There are several features of interest in the complete statistics of mineral production. The yield of gold from Southern Rhodesia for the year 1920 amounted to 552,498·12 fine ounces, valued at £3,056,549. This shows a decrease of 40,724·27 fine ounces in weight, but an increase of £557,051 in value as compared with the previous year. The increase in value is due to the premium realised on gold sales during the year. The following amounts and values of other metals and minerals, coal and diamonds, were also declared, viz.:—

	Value.
Silver: 158,981·96 fine ozs	£58,178
Copper: 3,108·17 tons	333,111
Coal (raised): 578,492 tons	252,220
Chrome ore: 60,268·96 tons	245,378
Asbestos: 18,822·63 tons	459,572
Tungsten: 17 tons 496 lbs	1,519
Arsenic: 436·79 tons	16,510
Mica: 96 tons 1,624 lbs	25,153
Antimony: 11·39 tons	219
Tin: 4·24 tons	661
Diamonds: 248·875 carats	1,917
	£1,394,438

The grand total value of the mineral production for the year 1920 was £4,450,987 as compared with £3,519,375 for the year 1919, being an increase of £931,612. This increase is made up as follows:—Increase in value of gold over 1919, £557,051; increase in value of other metals and minerals over 1919, £374,561; total, £931,612

The Gold Premium.

The premium on gold has fluctuated very considerably since a free market for the sale of native gold was established on 25th July, 1919. The following premiums distributed to the end of 1920 will show the extent of the fluctuations which have taken place, viz.: July 25 to December 31, 1919, 17s. per fine ounce; January 1 to March 31, 1920, 29s. 8½d. cer fine ounce; April 1 to June 30, 1920, 20s. 9d. per fine ounce; July 1 to September 30, 1920, 27s. 1d. per fine ounce; October 1 to December 31, 1920, 33s. 5¾d. per fine ounce. The premiums are payable at the termination of each quarter, and represent the average realised during the quarter

Native Labour.

The supply of native labour during 1920 was appreciably in excess of the previous year. The average total number employed at the end of each month was 30,875, as compared with 30,675 in 1919, being an increase of 6,197. The average number employed on producing gold mines was 21,550 as against 20,458 in 1919, an increase of 1,092 The average number on non-producing gold mines was 4,393, as compared with 3,453 in the previous year, an increase of 940. The average number on coal and other mines was 10,931, as against 6,766 in 1919, an increase of 4,165.

The Strike Position in Rhodesia.

According to a message from Rhodesia, the Mine Workers' Union have signed the guarantee which the mine owners asked for unconditionally. The companies are now re-engaging their men and informing them that operations will restart on all mines on Wednesday mornig.'' A later message stated: Although the miners have given the guarantee required by the owners as to freedom of employment, the situation is complicated by their refusal to work until the guarantee has been superseded by a conference which will establish agreements for Rhodesia similar to those operating on the Rand. Our correspondent states that the mines will formally open to-morrow, and if the men refuse to resume a new position will be created, and the conference (to which the owners had agreed, and which is contemplated for April) may have to consider the whole economic basis whereon the miners are to continue working.

NEW PATENTS OF ENGINEERING INTEREST.

Edward Buckley.—Improvements in or relating to automatic couplings
James Cowan and Lauchlan Cowan.—An improved haulage clip.
Horace Stephen Powles.—Improvements in valves for internal combustion engines.
Thomas Webster and Frank Sanders.—Improvements in or appertaining to jack-hammers or like drills.
Minerals Separation, Ltd.—Improvements in or relating to the recovery of gold from pyritic ores.
Alexander Charles Bell, Jeremiah Dacey and Eugene Borkum.—An improved hand rock drill.
Hamlet William Clarke Grittens and William Birkley.—Improvements in or relating to rope grips.
Ingersoll Rand Co.—Improvements in independent rotation for percussive tools.
Johannes August Heinrich Meyer.—Dust eliminator.
John George Williams.—An improved skip catch.

Edendale.

The Edendale people have, wisely, we think, postponed the flotation of the larger company. In the past week they have sold 15 tons of galena at £15 per ton and have entered into contracts to sell another 50 tons at £11 10s. per ton. The intention is to erect a small smelting plant on the pro-property.

British Coal Conditions.—In consequence of the present depression, the difficulties with which the coal industry had previously to contend have become more acute. Owing to the falling off of business the whole wage advance of 3s. 6d. per shift secured by the miners in the November strike settlement has been blotted out. It is reported that over 70,000 colliery workers in South Wales are now out of employment or on short time.

Italy's Coal Contract.—America has secured a contract to supply Italy with coal for the next five years, the British tender, owing to increased costs of production, being much higher.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—UNIVERSAL WAGE REDUCTION—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—THE HUME PIPE COMPANY'S EXHIBIT AT THE SHOW—COAL POSITION IN BRITAIN AND THE UNION—OIL—FINANCIAL.

General Position.

Merchants' opinions are somewhat divided this week as to the present position of things; while some think that there is a slight improvement in the making. Others see no sign of betterment at present. Be that as it may, though business since the Elections has been more active as regards selling, prices undoubtedly are not in favour of merchants, who in many cases are selling at cost or even under. The financial stringency is as acute as ever, and most lines now being sold are being disposed of to make clearances. The present depression, however, cannot be looked upon to-day exactly as a landslide, but as a gradual process going on from day to day. Merchants, as a matter of fact, are at the moment unable to tell from week to week how prices are going to rule in the immediate future. As a leading importer appositely remarked, the present position may roughly be categoried under, and is certainly governed by, the following three vital factors:

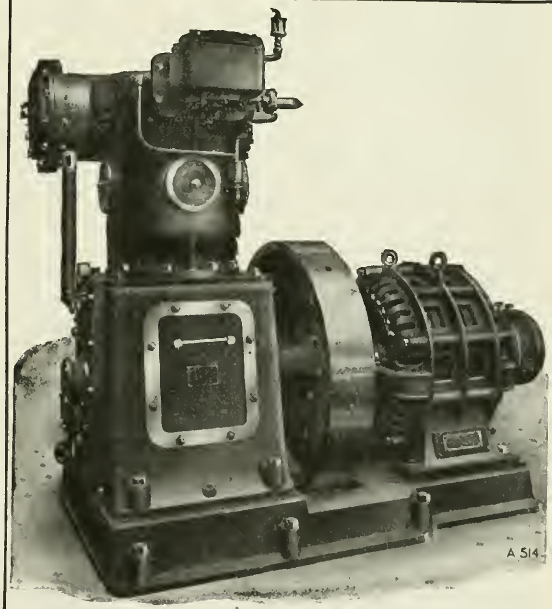
(1) Cost of raw materials.

(2) Cost of wages.

(3) Manufacturers' profits—business automatically improving or declining with the rise or fall in these basic conditions. The first phase, a reduction in the cost of raw materials, is now in evidence, and there is a tendency, therefore, for things to improve, which will be accelerated by a further drop in the cost of raw materials. The second favourable factor, lower wages, he said, we are now seeing in the universal cut of wages, which, he thought, was bound to continue; and the final stage in a general revival of business would, he said, be reached when merchants shall have succeeded in bringing down their manufacturers' profits to something approximating more than is the case to-day to pre-War conditions. The latter *desideratum* is, of course, intimately bound up with the decreased costs of wages and raw materials; but that wages, at any rate, all over the world, and even here in the Union, are coming down there is no doubt whatever.

Iron and Steel.

Business has improved somewhat during the week; there are many more inquiries, and brokers appear to be busier than they have been for some little time. There are not so many cheap parcels of material offering now as there were a few weeks ago, and a number of big holders seem either to have got out or to have weathered the storm. The following are ruling quotations: Dunswart, 33s.; Union Steel Corporation's products, for small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d.; imported iron and steel in flats, small sizes from 40s. to 50s.; larger sizes, 38s. 6d. to 40s.; big sizes in flats, best British, are from 49s. 6d. to 55s. in iron and steel; ¼ in. rounds, iron and steel, 69s. 6d.; 5-16 in., 62s. 6d.; ⅜ in. iron, 38s. 6d.; steel, 40s.; 7-16 in., 44s.; ½ in. and ⅝ in. rounds iron, 37s. 6d.; mild steel, 43s.; ¾ in. iron and steel, 12s. 6d.; ⅞ in. to 2 in. iron rounds, 39s. 6d.; larger sizes in iron, 52s. 6d.; 1 in. to 3 in. mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼ in. square iron, 60s.; ⅜ in., 47s. 6d.; ½ in. to 2 in. square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ¼ in., 11s. 6d.; 1¼ in. to 3 in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 17s. 6d. to 18s. 6d.; imported angles, 12s. 6d. to 47s. 6d.; shafting, 3-16 in., 1s. 2d.; ⅜ in., 1s. 1½d.; 7-16 in., 1s. 1d.; ½ in., 10¾d.; ¾ in., 10¼d.; 1 in., 9½d.; 1¼ in. to 2 in., 8½d. to 8¾d.; sizes over that are 7½d. to 8d.; flats, spring steel, 8½d. to 9d. per lb.; mild steel plats, 1-16 in., 19s.; ⅛ in., 18s. 6d.; 3-16 in., 16s. to 17s. 6d.; ¼ in., 14s. to 16s.; 5-16 in., 12s. 6d.; ½ in., ⅜ in., ⅝ in., ¾ in., ⅞ in. and 1 in., 11s. to 16s.; bolts and nuts, hex tapped, ⅜in., 1s. 2½d. to 1s. 1d. lb.; ½in., 77s. 6d. per 100 lbs.; ⅝ in., 66s.; ¾ in., 64s.; nuts, hex tapped, ⅝ in. and ¾ in., 87s. 6d.; fish plates, bolts and nuts, ⅜ in., 1s. 4d. per lb.; ½ in., 9½d. per lb.; ⅝ in., 72s. 6d.; ¾ in., 68s. 6d. per 100 lbs.; dogs spikes, 43s. per 100 lbs.; rivets, ¼ in., 1s. 3d. per lb.; ⅜ in., 10d.; ½ in., 64s.; ⅝ in., 60s.; ¾ in., 58s. 6d.; per 100 lbs.; high speed tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜ in. round, 1s. 10d.; ½ in., 1s. 8d.; ⅝ in., and upwards, 1s. 6d. per lb.; hexagon,



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½ in., 1s. 9d.; ⅝ in. and upwards, 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d. per lb; copper tubes, 2s. 9d. and 3s. per lb.; copper sheets, 2s. 7d.; brass sheets, 2s. 6d.; ingot leads, £40 a ton; ingot zinc, 5d. lb.; phosphor tin, 3s. 3d. per lb.; ingot copper, 10½d. per lb.; drill steel, 7½d.; hollow, 1s. 1½d.; wire nails, 50s. to 65s., according to length, shovels, 65s. to 85s.; wheelbarrows, 67s. 6d. to 72s. 6d.; picks, 4 lbs., 45s.; 5 lbs., 55s.; 6 lbs., 70s.; 7 lbs.; 75s.; pick handles, 35s.; barbed wire, 33s. 6d. to 50s. per 98 lb. coil of 500 yards; wire fencing, 30s. to 50s., according to mesh; screening, 3s. to 10s. per sq. yard, according to quality.

Piping and fittings continue in fair demand at, for one inch galvanised iron, new, 1s. 4d. a foot; 1¼ in., black, new, 2s. a foot; secondhand, 1½ in. and 2 in., 1s. 6d. a foot; 3 in., 3s.; 4 in., 3s 6d.; 5 in., 4s.; 6 in., 7s.; 9 in., 8s. 6d.; 10 in., 10s.; 12 in., 11s. 6d. a foot. Baling wire rules from 30s. per coil, 16 gauge.

A well-known Natal contractor is in town purchasing machinery on rather a large scale.

Reports from the Sheffield and Scottish iron and steel trade are to the effect that there is a slump in orders owing to Continental cutting of prices.

The price of pig iron, which was recently reduced, has so far not been productive of much business. An East Coast firm secured the contract for 12,500 tons of rails for South Africa at something under £16 a ton.

Universal Wage Reduction.

London reports that there is indications that the railwaymen and coal miners are becoming reconciled to the wages reductions.

From America it is announced that the wage reduction is growing apace. Practically all the large railway systems are now reducing the wages of unskilled employes, which means, it is thought an early reduction in the wages of skilled employes.

The largest shipyards in America have given notice of a 10 per cent. reduction in wages as from 1st prox., and the Chicago Meat Packers' Association of a 12½ per cent. reduction from 15th inst.

Locally the municipal employes have shown a commendable spirit in signifying their agreement with a reduction in wages of 5 per cent. for a period of three months, which will probably take effect from 1st April.

The Siemens Steel Association of South Wales has, it is reported, asked its employes to agree to a substantial reduction in wages. Sheffield employers have notified a 17½ per cent. reduction in wages in the rolling mills and forges.

Rhodesian Miners' Strike.

Negotiations are still pending with a view to a satisfactory settlement of this dispute, but up to the present with no result. Indications are, however, apparent that the present deadlock between the Mine Owners' Association and the miners will not be of long duration.

Timber and Building Materials.

The building trade is not too active at the present time, and there is little change to report this week; timber has a slightly lower tendency, while iron maintains its price fairly well. 3 x 9 deals rangs from 1s. 6d. to 1s. 9d.; scantlings, 1s. 5d. to 1s. 7d.; floorings, 10d.; ceilings, 7d.; beaver board, 5¼d. to 5½d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d. a cube; corrugated iron, 24 gauge, 10¼d. to 11½d. Stocks of timber on hand are good and consignments are arriving freely from the Baltic. In furniture woods there has been a little better inquiry during the week; prices are firm and rule as follows: Japanese oak, 1s. 11d. per sq. foot; Burmah teak, 24s. 6d.; American oak, 1s. 9d. to 1s. 10d.; 1 in. boards, 25s. per cubic foot; American black walnut, 1s. 10d. to 1s. 10½d.; West African mahogany, 2s. 2d. to 2s. 4½d. per sq. foot, according to quality.

In the secondhand iron and timber yards business is fair; materials are arriving slowly; prices are about 8d. for iron and 1s. 4d. for timber.

For pressed and wire cut bricks prices range from 60s. to 75s. per 1,000, with small demand; damp course and roofing, 1 ply, 40s.; 2 ply, 52s. 6d.; 3 ply, 65s.; cement, 11s. 6d.; white lime, 7s. per bag.

The Blue Building and Plastering Lime Trade.

The blue building and plastering lime trade has been somewhat quiet of late. The large producers of blue hydraulic lime have reduced their prices slightly, and blue building lime is being sold at 4s. 3d., and blue plaster lime at 5s 3d. per bag delivered. Contractors prefer buying their requirements direct from the works now, being thus able to secure any special brand of lime, as in the past several merchants would pass off an inferior class of lime as being of the better kind. In consequence of cement being now more plentiful, lime is not inquired for to the same extent as it was some months ago. The various housing schemes, however, are bound to improve trade in this section.

The South African Building Trades National Board is now in conference here, and are discussing the establishment of Wages Boards and the regulation of wages of those employed in the various trades and occupations in industrial and commercial concerns, the consideration of voluntary agreements between employers and employed, the national wages question, joint boards, the shop stewards' movement, also whether closer unity amongst the organisation controlling the building trade is not possible; and further "the control of the industry."

Electrical Goods.

Dealers are still busy with a fairly large amount of orders on hand. Tubing is coming down in price at Home on account of the steel strip used in its manufacture being very much lower; the price locally is 20s. to 24s., and is expected to fall very soon; the tendency, at all events, at present, is a downward one in view of recent quotations of a drop of 20 to 30 per cent. With this exception, prices, it is anticipated, will rise all round. Continental electrical goods are increasing in value, although the labour factor is in their favour, but the cost of raw materials, which is con-

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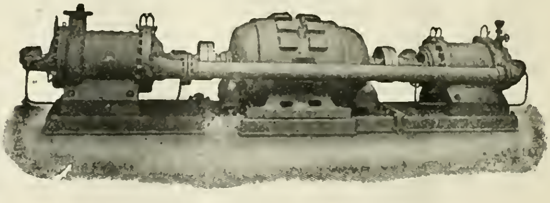

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trolled by the Allies, is constantly increasing, and consequently the difference between foreign and British goods is, if slowly, gradually diminishing. Dealers report the receipt of very good orders from Kimberley (in spite of the recent retrenchments), Bloemfontein, etc.

The Hume Pipe Company's Exhibits at the Agricultural Show.

The Hume Pipe Company (South Africa), Limited, have this year, in addition to their stand in the centre of the Machinery Hall, taken an extensive piece of ground in the "Fat Stock Section."

In the Machinery Hall they are exhibiting various classes of Hume Concrete Pipes, and around the edge of the stand they are laying a system of Hume pressure pipe connected to various kinds of fittings, such as are used for towns' water supply and irrigation projects. For instance, Hume concrete pipes are shown connected to T pieces, elbows, Ys and valves. The Company has recently developed a new process of manufacturing elbows, T's, Y's, etc., in concrete. In the past it has been necessary to have such fittings made in stoneware when the pressure was less than 10 lbs. per square inch, and for higher pressures the fittings had to be made in cast iron. The new process of making these Specials in concrete enables pressures up to 50 lbs. per square inch to be carried. Another feature of the exhibit is especially smooth-bore concrete pipes and fittings for use when conveying sewage. These pipes have a glass-like surface inside and offer less resistance to the flow of sewage than any other type of pipe made at the present time.

Outside, the exhibit erected in the "Fat Stock Section" shows the Hume Pipe Company's new Patent Silo. This silo is erected from concrete blocks which are made at the factory and delivered ready for use. The internal diameter is 15 feet, and the height may be anything up to 60 feet. Special openings are provided for doors, and galvanised iron chutes may be added if required. The block which is used in the construction of this patent silo is slightly curved in form and is made so that each block interlocks. Given a level foundation it is impossible for anyone to go wrong as the silo blocks fit automatically in position.

Alongside the silo is a complete sheep-dipping tank made in concrete. It is sunk in the ground, surrounded with a coping to prevent foreign matter blowing or being kicked into the dip. Generally speaking, the dip has been designed to meet the requirements of the Agricultural Department.

Drinking troughs, feeding troughs, all descriptions of tanks, concrete poles, verandah columns, polished and plain, etc., are exhibited on this stand. Every effort is being made by the Company to supply all the requirements of builders and architects in factory-made concrete goods.

Union and Oversea Coal Position.

The Miners' Federation in London last week discussed the decision of the Government to decontrol the coal industry on 31st inst., and the dispute between the coal owners and the miners as to whether wages should be fixed on a national basis as during the war or according to local conditions. The result was a resolution denouncing the action of the Government in repudiating responsibility to the industry and affirming the fixing of wages on a national basis. The miners' contention is that the attitude of the Government and owners means a reduction in wages of at least 5s. a day. A grave situation is threatened unless some understanding between employers and employed is reached on the wages question before the decontrol of coal on 31st inst. A large colliery proprietor and coal exporter has declared that the industry was at present losing £5,000,000 a month, one South Wales Colliery, he said, lost £50,000 last month. Another coal exporter pointed out that the Mediterranean ports were now getting coal from Australia for considerably less than c.i.f. prices from South Wales.

South African Coal.

According to the "Shipping Gazette": Owing to the present level of prices of coal in Britain, it is becoming more and more difficult for Natal and Transvaal coal to compete for the trade in North Europe. It is reported from Copenhagen that a shipment of Union coal, bought three or four months ago at £11 a ton, c.i.f., but delayed through accidental causes, will arrive at that port when English coal can be bought by the consignee at 65s. per ton, c.i.f., in Denmark.

British Industries Fair.

An enormous amount of business, it is reported, has resulted from this business exhibition in London, Birmingham and Glasgow. Buyers from fifty countries attended the fairs, the greatest trade being done with America. Manufacturers of domestic pottery ware and of fancy goods seem especially to have benefited, while considerable business was also done in leather goods; furniture and toys were not so well supported. Undoubtedly a much-needed impetus has been given to British industries by this excellently managed fair, and should go far towards lessening unemployment in Britain, as some manufacturers have been booked up with orders for twelve months or more at full pressure.

Financial.

It is announced that the Treasury Bill discount has been reduced from 6½ per cent. to 6 per cent., and that there are indications of an early reduction in the Bank of England rate.

Locally, the rate for remitting money Home has again fallen. Cable and sight drafts may now be sent to London at a cost of £1 per £100, up to £500; over the latter figure the rate is 15s. per cent. On the other hand, the banks are buying bills on London at 15s. per cent. as against sellers.

Motor Car Industry and the Agricultural Show.

Through some regrettable misunderstanding, which, however, may ultimately be adjusted, it is understood that the members of the South African Motor Traders' Association, Limited, will not exhibit at the forthcoming Show. Should, however, no modus vivendi be reached before the opening, it is thought in many quarters that the Show will be robbed of one of its most attracting features.

Oil Demand.

Oil is being sought for all over the Empire. The oilfield on the MacKenzie River, in North-Western Canada, is regarded as a big find, but owing to its inaccessibility it will probably take years before it can be worked on a commercial scale. The Anglo-Persian Oil Company has acquired drilling rights in Newfoundland. Oil has been discovered in Trinidad, and much boring is being carried on in Australia. Not much success has attended drilling operations in Britain itself, with the exception of the works at Hardshoft, Derbyshire, whence good quality oil has steadily being obtained for about 18 months.

The North-Western Cape Colony Prospecting Syndicate, which is boring for petroleum at Dubblede Vlei, in the Carnarvon district, has reached a depth of 4,408 feet. The formation is very broken, and the flow of gas stronger. It is proposed to bore to 4,500 feet, or deeper, if indications warrant it.

A Novel Engine Room Telegraph.

One of the most novel and interesting devices shown at a recent exhibition of scientific appliances in London was an electrical instrument for measuring and controlling the speed of machinery. As applied on board ship it enables the captain to indicate to the engineer exactly the speed at which he wishes the engine to run, ahead or astern. Similarly, the captain can ascertain at any moment the speed at which the engines are running. This appliance can be used in a factory to indicate to the works manager in his office the speed at which any machine, no matter at what distance, is operating. The instrument is exceedingly simple and equally sensitive.

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The South African

Mining & Engineering Journal

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Established 1891.

Vol. XXXI., Part I.] JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 26, 1921 [No. 1539.

THE PRESIDENT OF THE CHAMBER.

Mr. H. O. Buckle, who on Monday delivered a noteworthy address at the expiration of his first year of office as President of the Transvaal Chamber of Mines. Mr. Buckle's speech is commented on at length in this issue of the Journal, as also are the important remarks made by Sir Lionel Phillips. Sir William Dalrymple and Mr. Samuel Evans were elected Vice-Presidents, and constitute, with Mr. Buckle, the "Big Three" of the Mining Industry for the current year.

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The Chamber of Mines Meeting.

A CRITICAL REVIEW—MR. BUCKLE'S MASTERLY ADDRESS—SIR LIONEL PHILLIPS ON THE FUTURE OF THE RAND—WHY WORKING COSTS MUST BE REDUCED—ECONOMY AND EFFICIENCY REQUIRED ALL ROUND—COSTS OF ADMINISTRATION AND INTERFERENCE WITH THE MANAGEMENT—HOW TO MAKE SOUTH AFRICAN MINES ATTRACTIVE TO INVESTORS—MISTAKES THAT MUST BE RECTIFIED—THE JOURNAL PLEADS FOR REFORMATION.

On Monday afternoon the Transvaal Chamber of Mines held what is probably its last annual meeting in the old premises in Market Street. The next annual gathering will doubtless be held in the new building adjacent to the Stock Exchange, and we trust that when that meeting takes place the gloom which pervades the industry to-day will have been dispelled and that the prospect of the Rand being a large producer of gold a hundred years hence (which was an anticipation expressed by one of the most prominent of our mining men a few years ago) will be brighter than to-day.

The President and Sir Lionel Phillips each made highly important speeches, which we commend to the close attention of our readers and upon which we comment below. At the conclusion of the meeting Sir William Dalrymple and Mr. Samuel Evans were elected Vice-Presidents for the ensuing year, and the "Mining Journal" would like to offer its congratulations to these gentlemen on their important appointments. We tender, too, our congratulations to Mr. Buckle on his admirable review, and to him and to the newly elected Vice-Presidents we offer our best wishes for a successful year of office during 1921.

In seconding the speech of the President of the Chamber of Mines, delivered to a fairly large and representative audience on Monday, Sir Lionel Phillips congratulated Mr. Buckle on his masterly address and made the point that he had succeeded in imparting to what is generally a dry-as-dust review of the economies of the industry and a tedious account of the stewardship of the Chamber a few touches of humour which brightened up the whole statement as sunshine enlightens a sombre sky.

There can be no denial of the fact that on the whole Mr. Buckle's speech did not sound a highly optimistic note; it would have been a discord in the prevalent *funèbre* had it done so. But as an exhaustive review of the numerous disabilities under which the mines have laboured during 1920, the relations of the Chamber in regard to the Government and Labour, the colossal work it has organised in reducing silicosis and minimising the incidence of pneumonia, its many-sided activities in regard to such matters as enemy shareholdings, native trading on mines, the recruitment of labour from northern latitudes, the gold refinery, the problem of the low-grade mines, railway rates on bunker and export coal, and a host of other things, Mr. Buckle in his inaugural address as President of the council of the Rand's wise men at the end of his first twelve months of office must be accounted to have made an admirably lucid and well-reasoned statement.

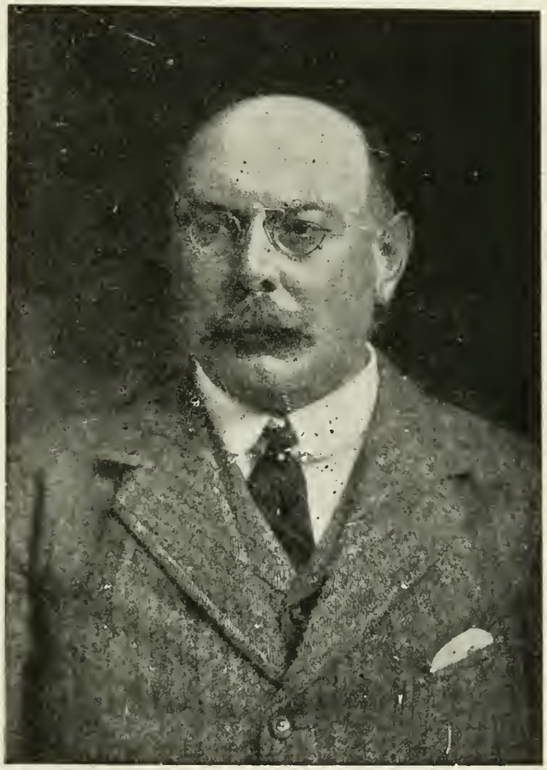
The Speech from the Throne.

In years gone by the address of the President of the Chamber was a veritable speech from the throne, applauded by the baronets and knights and minor captains of the court of industry and delivered for the benefit of its subjects and menials, the workers, and the shareholders.

Those autocratic days have altered somewhat. The Chamber, like most other courts and bodies corporate, has become more democratic in these days of tottering monarchies. And if in recent times it has sought too much the goodwill of an ungrateful proletariat it is encouraging to observe that, in the diplomatic language of Mr. Buckle, the Chamber's policy has not been changed but that the proletariat has merely overstepped itself.

The President's Modesty.

Mr. Buckle's first year of office has been a difficult and trying one and his judicial mind has come through the ordeal with credit. But he will have none of this himself. In a humorously expressed tribute of thanks to his colleagues and subordinates, he remarked that the vice-presidents and the staff of the Chamber did all the work whilst he (Mr. Buckle) took all the credit!



Sir Wm. Dalrymple, Vice-President of the Transvaal Chamber of Mines for the current year.

So Greatly Admired, so Little Understood.

And in another satirical passage he congratulated the amalgamated scientific and technical societies of the Rand on now possessing a clubhouse worthy of those institutions in which learned papers were read "which we all admire so much and of which we understand so little." What a wealth of wisdom there is in this admirable little bit of irony!

No new sentiment this, mark you. Long ago it inspired Gilbert and Sullivan to give the famous advice to the would-be Admiral, and it is the principle which until the test of arms proved its falsity made the heads of the British Army and Navy loquacious barristers but never soldiers or sailors. We say this without any intent to offend Mr. Buckle. Of recent years the demands and conciliation of labour have become the greatest problem of industry. These subjects have been of most vital moment to the Rand, and we do not think that any man is capable of handling them more effectively than the present Chairman of the Chamber, with his legally trained mind and vast experience of phthisis and boards of reference.

The Chamber, it is true, has its technical advisers, but we consider that it would be an advantage and not a detriment if more members of that august body had a sufficiency of technical knowledge to appreciate the deliberations of those societies which concern themselves with the science of mining as distinct from the intricacies of finance.

The Premium.

Mr. Buckle in his address stated that the price of gold had been the outstanding concern of the Chamber during the past year and he sketched the rise and fall of the product of the mines in a few terse sentences. Of the future movements of gold the President was unable to give much information, except that the probabilities were in favour of an annual downward tendency.

Sir Lionel Phillips supplemented this by stating that the only reason and possible excuse some of the mines had for going on was the hope that, with the coming exporting season from America, there would be an increase in the gold premium. Without the hope of an increased premium there was no reason for many of them keeping on. But as to the price which is likely to prevail in the future, neither the President nor the head of the Central Mining and Investment Corporation were able to add much to the cautious view expressed to us the other day, that the quotation for gold would either move upwards or downwards provided that it did not remain stationary.

Working Costs.

But, as we said in our last issue, it most emphatically does not conduce towards industrial stability to have sixty miles of mines directly employing 200,000 workers and largely carrying the prosperity of the whole country on its back dependent on the incidence of the American exchange. The Rand requires something less fickle and ephemeral than this upon which to balance its expenditure and revenue, and the only satisfactory stability obtainable is that which is offered through the media of lower costs of operation and greater efficiency.

We are a little surprised that Mr. Buckle did not make a bigger point of this supreme urgency in his speech. Perhaps he diplomatically left this highly mportant aspect of the business of gold mining on the Rand for the important personage who spoke after him to " rub in " to the assembled company, to the populace of South Africa in general, and of the Rand in particular. Sir Lionel did not mince matters.

Sir Lionel's Telling Speech.

He spoke plainly and to the point, and although he only reiterated what has often been emphasised in the columns of this journal he has lent to the subject of the imperative necessity for reducing expenses on the Rand, and the gloomy prospect which confronts Johannesburg unless this is done, the great weight and influence of his authority as the head of the premier mining corporation of South Africa. Sir Lionel, in the course of his remarks, declared:

" Tremendous sums of money were distributed by the gold mines and as a result you have this wonderful city of Johannesburg," and having recalled the early days of Johannesburg, he struck a warning note.

" You have this wonderful city of Johannesburg," he said, " but I am afraid the gold-mining industry is past its zenith and is on the wane.

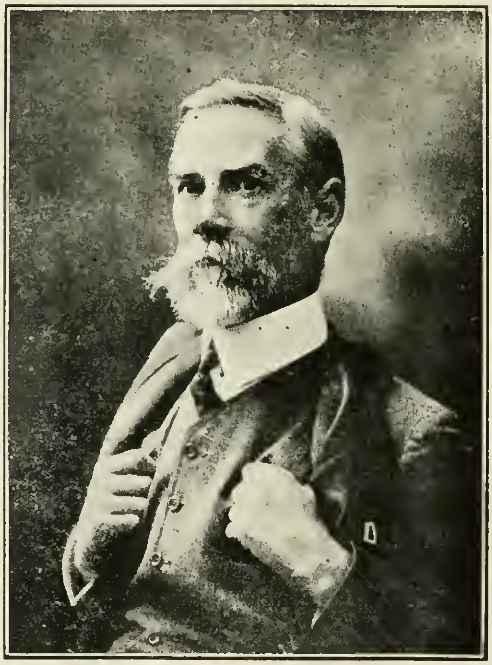
A Form of Creeping Paralysis.

" It is a painful thing when an industry like this begins to decay. It is hardly apparent at first: it is a kind of creeping paralysis. Although Johannesburg would be still in existence and you might have a town hall and trams running in the streets, it would be contracted dreadfully.

" I do not think this is sufficiently appreciated in Johannesburg. I do not think that when a mine shuts down and ceases to spend a large amount of money each month the population realises what an insidious effect this has—not only on the town but on the whole country.

" It is always a great pity when a mine closes, and I sometimes ask whether the closing could not have been avoided. ' And I question whether the peril in which all the mines now stand could not have been avoided by the exercise of a little goodwill.

" To-day I want to face the present position. It is only by facing it that we shall fully realise it. I want to address the deepest and sincerest warning that I can to our Labour friends. If we turn just for a moment to the conditions of employment in Europe and observe the conditions, we will see that they are simply appalling.



Mr. Samuel Evans, Joint Vice-President with Sir Wm. Dalrymple of the Transvaal Chamber of Mines, 1921.

" That is the condition of things here," continued Sir Lionel. " We have only on the Witwatersrand a given quantity of gold. We have got to keep on working this or a lot of mines would have to be closed. In fact, a number of mines ought to be shut down now.

An Authoritative Utterance.

" It seems the idea is that at all costs you must avoid benefiting the richer mines," said the speaker. " But unless something can be done it is evident that a number of mines must be shut down. And many of these can never be re-opened, because the cost of doing so would be prohibitive.

"I hope that the words I give to-day with the greatest possible sincerity will be read and pondered over by people outside the mining industry and that they will give them their attention.

"I do appeal to our Labour friends, and especially to the leaders and to those who have extreme views, that frivolous strikes should now be avoided. This is not the time for them."

He also pointed to the absolute need for discipline in the mines. Except the manager had supreme authority no mine could go on. If the workers owned the mines themselves they would find that they must have a supreme commander of a mine or nothing could be done. The present system of committees at every turn was an impossible one. There was also the harmful effect on the natives of seeing a lack of discipline among the white workers.

"I believe," said the speaker, "that if every man gives his own best efforts during working hours you will see a difference in the cost of obtaining our gold.

"Lastly, Mr. Chairman, I want to say, and as representing a good many members, if you are receiving demands that you consider the conditions do not justify, you must resist them—not only in the interests of shareholders, but of the working population, in the interests of this town and of the country as a whole."

This is forceful speaking, but the statements made by Sir Lionel are tragically true.

The Golden City's Outlook.

We may be pardoned if we say that they remind us of certain gloomy views expressed in the columns of this paper nearly two years ago, in which a correspondent of this journal wrote of the demise of Johannesburg and its inability to live on the reflected glory of the Far East Rand, unless something was done, and done speedily, to improve the situation.

We are heartily in agreement with Sir Lionel on the broad premises of his speech, although we may not be in agreement with him on the means and methods which will have to be adopted to induce the Rand to return to conditions of industrial sanity.

A Consulting Engineer's View.

In a leading article appearing in this week's impression of the *Journal* we reproduce a letter written to the Editor of this journal by a gentleman who until recently occupied a position of foremost importance on the Rand.

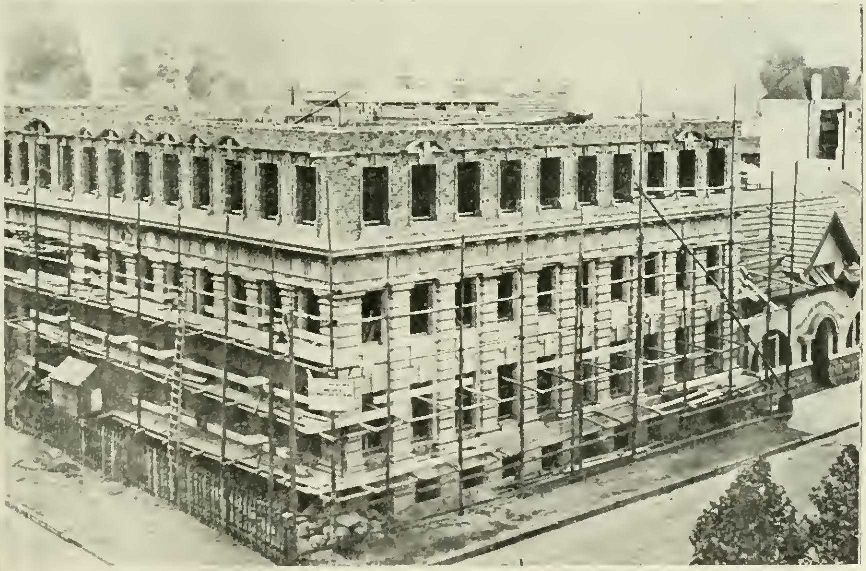
We recommend a close perusal of that letter to Sir Lionel and his colleagues of the Wotenagemot of the industry, because it is written by a man who not only has had an ample experience of the Rand's social and industrial problems but by one who can understand as well as admire the papers read before the technical societies of the Rand, which the members of the Chamber of Mines "admire so much and of which they understood so little."

Our correspondent was until recently one of the leading consulting engineers of the Rand, and when he says that efficiency and economy must start at the top as well as at the bottom of the pay roll of the Rand he voices a thought that will be applauded by all who have the welfare of the Rand at heart and who have real knowledge of the true maladies of the industry to-day. We trust that we have not misunderstood Sir Lionel. We listened to his speech on Monday with rapt attention and we are thoroughly in agreement with all that he said as to giving full authority to the mine manager—the man on the spot—and we also fully endorse what Sir Lionel said, and our correspondent writes as to the stultifying influence of workmen's committees, etc.

Interference with Managers.

We rather gained the impression—wrongly perhaps—that Sir Lionel in his denunciation of interference with the management referred more to hindrances from employees than to obstacles placed in the way of sound technical management by laymen superiors.

We think that interference of the latter type, although it may be considered helpful, is in reality far more vicious and destructive in its effect than any attempted trades union autocracy of the workmen and their insidious committees. Efficiency and economy are required not only of the trammer on the lower rungs of our industrial ladder but also of the man on the roof who draws a princely salary and who in reality would have considerable difficulty in discriminating between a winze and windlass. These views, too, have frequently been expressed in recent issues of this journal, and it is a source of considerable satisfaction to us to know that the expressions of opinion contained in this journal during the past two and a half months have been read (and we believe sometimes blue-pencilled) by those who have read the speech from the throne in the days of the Rand's autocracy.



The New Chamber of Mines' Building now in course of construction.

How to Make the Rand an Attractive Field for Investors.

And there is a further point we wish to make. Sir Lionel referred to the necessity for reducing working costs, not only with a view to enabling the low-grade mines to carry on but also with the object of increasing the dividends of the richer mines and thereby making the Rand a field sufficiently attractive to induce fresh capital to invest money in it. With this laudable desire, too, we are quite in accord, but we would suggest to the heads of the industry that the recent methods of finance resorted to by numerous Rand companies are not calculated to make the public regard South African mining ventures as alluring investments for any loose money they may possess.

Options.

We refer particularly to the precarious method of expecting to raise funds by means of options, a system which we strongly denounced in our last issue. The Modderfontein East, with its reported disappointing development values and its financial embarrassments, is a pathetic example of a proposition which has been caught in the flimsy financial snare of options, and unless this sort of business ceases people with money to invest will give South African mining ventures a wide berth. They would probably just as soon invest in Costa Rica loans or the Brewery stocks of "dry" America. We look, then, to the leaders of this great industry to make and fulfil a promise, not only that every effort will be made to reduce costs and improve efficiency both on the mines and in the head offices but that furthermore the financing of South African mining companies by means of options and other unsound methods will *not* be countenanced in the future.

This method has been a monstrous failure. No one knows this better than the heads of the industry, and we consider that it would be in the interests of the Witwatersrand if those responsible for recent option issues frankly admitted that the scheme has had such unsatisfactory results that it will not be attempted again.

T.G.M.E. DIVIDEND PASSED.

The following cablegram has been sent to London:—"In consequence of the fall in price of gold and in pursuance of the policy to conserve financial resources announced by the chairman at the annual meeting, on 22nd September last, the Board has resolved to declare no dividend for the half-year ending 31st March, 1921."

Dr. F. H. Hatch, Ph.D., a member of the Home Iron Ore Supply Committee of the Ministry of Munitions during the War, has been appointed Technical Adviser to the Mines Department, London, on the questions affecting the metalliferous mining industry.

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MANAGER'S CERTIFICATE (COAL).—New Class recently started. Candidates being enrolled.

MINE SURVEYORS' CERTIFICATES.—We have secured 55 Certificates to date, and lead with passes by more than **10 to 1.**

OVERSEER'S CERTIFICATE.—We lead with passes, 1918 and 1919. 21 Certificates secured during 1920. Overseers' Class (Coal) recently started.

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The Chamber of Mines Meeting.

POINTS FROM THE PRESIDENT'S SPEECH.

Speaking at the annual meeting of the Chamber of Mines on Monday afternoon, Mr. H O Buckle, the president, said that during the past year the subject upon which the attention of all connected with the industry had of necessity been most closely fixed had been the fluctuation in the price of gold They had to recognise the fact that, while there would doubtless be fluctuations in the price of fold for some considerable time to come, there was every probability that the general tendency would be downwards until the standard price of £4 5s. was eventually reached. The inevitable effect of that tendency would be to compel the closing of further mines unless the costs of production could be reduced Already the Simmer Deep, the Knights Deep, the Jupiter, the New Heriot, and the Princess Estate—all of which could have been kept going had there been either a higher price for gold or lower costs of production—had ceased operations; and of the remaining 39 mines, six made a loss in January and 13 in February. If these fields were to die what might be termed a natural death, unhastened by artificial and avoidable conditions, there must either be greater efficiency or less expenditure.

Breach of Agreements.

"I am sorry again to have to refer to the frequency with which members of certain unions have failed to adhere to their agreements with the Chamber," continued Mr. Buckle. "Practically every strike which has taken place since the last annual meeting has constituted a breach of one or more such agreements. While in most cases the governing body of the union concerned has condemned the action of those sections, it has frequently been unable to enforce the prompt obedience to its decision which is essential to the smooth working of relations between employers' and employes' associations. In two cases—the engine drivers' strike of August last and the recent miners' strike arising out of the Consolidated Langlaagte dispute—the union itself was a party to the breach of agreement. The Chamber, while making every allowance for the difficulties of those members of union executives who honestly endeavour, often in the face of considerable difficulties, to enforce observance of agreements on extreme sections of their membership, cannot tolerate deliberate breaches of faith on the part of the bodies which represent and govern the unions. In the case of the engine drivers, the Chamber broke off all relations with their association until the strike was called off and the conditions of the broken agreement restored. As a result of the Consolidated Langlaagte strike the Chamber has refused to continue to collect subscriptions to the South African Mine Workers' Union, and its future relations with that union must largely depend upon the evidence the union can give in the future of its willingness and ability to control its own members. When the General Council—the supreme body of the union—voted to support the Consolidated Langlaagte strikers, who were admittedly acting in direct and flagrant violation of the Board of Reference agreement, the Miners' Union ceased to be such a body as the Chamber can deal with upon the old terms. Afterwards the Council itself appreciated the wrong position in which it had placed itself, and took the very proper step of reversing its vote and ordering the men back to work. It also constituted a committee to inquire into all the circumstances with a view to taking measures to prevent the recurrence of such unconstitutional action; but I regret to learn from the Press that it is apparently stopping that inquiry and reverting to its previous attitude. Such constant changes of policy only emphasise the impossibility of dealing with the union under its existing conditions.

Union in the Wrong.

"A large number of members of the union, by disregarding the notice of the Chamber and the instructions of their own executive to return to work, have broken their service and thereby forfeited certain privileges. The union has repeatedly appealed to the Chamber to condone this break, but it appears to your executive impossible to consider any such proposition until the union has received and acted upon the report of its committee of inquiry. The union was admittedly in the wrong, and it is for the union to do all in its power to repair that wrong before coming to the Chamer for assistance. In the past the Chamber has been extremely generous in relieving its employes from the consequences of such breaches of agreement, and there has been little indication that this generosity was appreciated. This was pointed out to the representatives of the unions at a conference held last year, and it was clearly indicated that unless the unions themselves succeeded in maintaining better discipline than had recently been the case it would be necessary for the Chamber to take steps to penalise the defaulters."

Government in Hot Water.

Mr. Buckle proceeded to deal with the work of the Miners' Phthisis Bureau, the Miners' Phthisis Sanatoria, native labour, health of natives, the South African Institute for Medical Research, and then alluded to co-operative societies.

Some Legislation.

Alluding to legislation, Mr. Buckle said that the last session of Parliament had not produced much legislation of special interest to the industry. It was a disappointment to them that the Financial Relations Act was simply extended for another year, without any provision being made by which the totally unexpected—and, he was convinced, unintended—provincial taxation on mining profits was removed. As, however, the period for which the Act was extended expired at the end of the current month, new and, let them hope, more favourable legislation on the subject was imminent.

Mr. Buckle expressed on behalf of the Chamber the heartiest congratulations to General Smuts on his recent success at the election. "I need not pretend that our rejoicing is entirely altruistic; we may reasonably hope that, now that he is at the head of a strong and united majority, he may be able to relieve us from the consequences of past action and inaction of which we have had reason to complain.

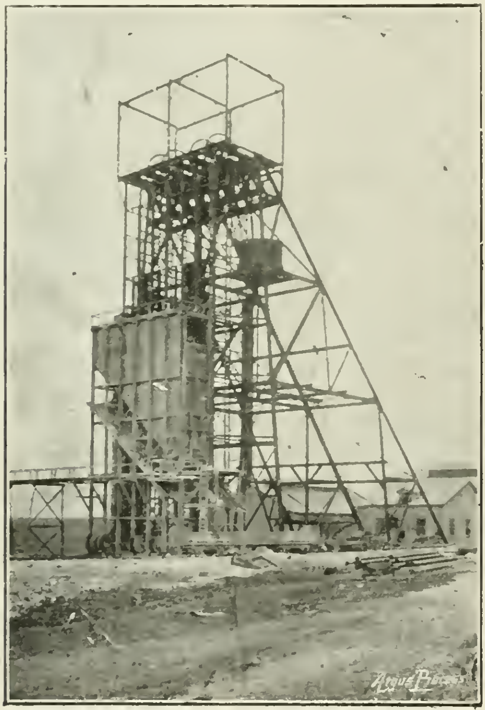
"While on the subject of Governmental inaction, I may remind you that nothing whatever has been done to put into force those recommendations of the Low Grade Mines Commission which require the concurrence of the Government. I do not forget the steps taken to establish a Mint, but as the Mint Act was passed before the Commission sat, it can hardly be considered as a consequence of their recommendation. Considering the enormous amount of time and labour which was devoted by some of the busiest men in the Union to that Commission, such a complete ignoring of their recommendations was scarcely courteous, and seems to indicate that the Government had never any serious intention of assisting the industry in its difficulties. Let us hope that the new Cabinet may take another view.

Colonel Creswell's Bill.

"Colonel Creswell's Bill for compelling mines to give several months' notice before closing down, under penalty of confiscation of a portion of their property, did not make any serious progress towards becoming an Act, as was to be expected, seeing the manifest injustice of the proposal. The idea, however, that it is somehow the duty of anyone who has once started a mine—the doctrine does not seem to have been applied as yet to any other form of industry—to continue to work it irrespective of results is, apparently, not yet dead. Take Daggafontein, for an example. The owners have put something like a million of money into it, and have got nothing whatever out of it. Now I read in the papers that a local movement is on foot to protest against the closing of the mine. We all know that the temporary cessation of operations is due to the fact that the market is at the moment unfavourable for raising additional capital. Is it expected that the owners should produce another million or two themselves? Suppose they haven't got the money, how can they possibly be compelled to spend it? Or suppose they have got the money, where is the justice of compelling them to spend it? Why should they, who have already expended large sums, which their employes and the local traders have gained, in the endeavour to establish a permanent industry, be singled out as suitable victims for spoliation? One would think that, if this absurd theory of preventing the closing of mines is to be applied at all, the proper people to be saddled with the expense of carrying it out would be those who have not as yet contributed anything towards the expenditure on this most speculative of industries—for example, the wine farmers of the Cape or the sugar growers of Natal. Such a suggestion is plainly ridiculous but less unfair than that those who have spent already should be compelled to spend more.

"More Reasonable Proposition."

"A more reasonable proposition would be that the traders of Springs, who have benefited largely by the Daggafontein effort, should be required to find the money to carry it on. I throw out this idea in the hope that their innate sense of justice will cause them to jump at this opportunity for supporting what they obviously believe to be a work of public utility. Then we are always being told—as in the case of the Miners' Phthisis Act—that the industry should be treated as a whole. Will someone please tell me why? If an exceedingly foolish man chooses to employ a large number of miners and natives to go and dig for gold on the top of Hospital Hill, where there is no gold, what possible reason can be advanced for compelling the intelligent people who have found gold on the East Rand to contribute towards the cost of his utterly wasteful efforts?"



A Typical Deep Level Headgear on the Rand: A field of waning production according to Chamber of Mines speeches.

Having thanked the retiring vice-presidents, Mr. Christopherson and Mr. Lynch, for their constant assistance throughout the year, Mr. Buckle made a humorous reference to his relations with the staff. "I want also to thank the officials and staff of the Chamber," he said, "for seeing me through a period which, owing to my inexperience in the kind of work that is done in these offices, would have been quite impossible to me but for their most friendly and loyal support. They have provided the knowledge and the hard work, while I have confined myself to trying to get the credit. It is an arrangement that suits me admirably—so long as it suits them."

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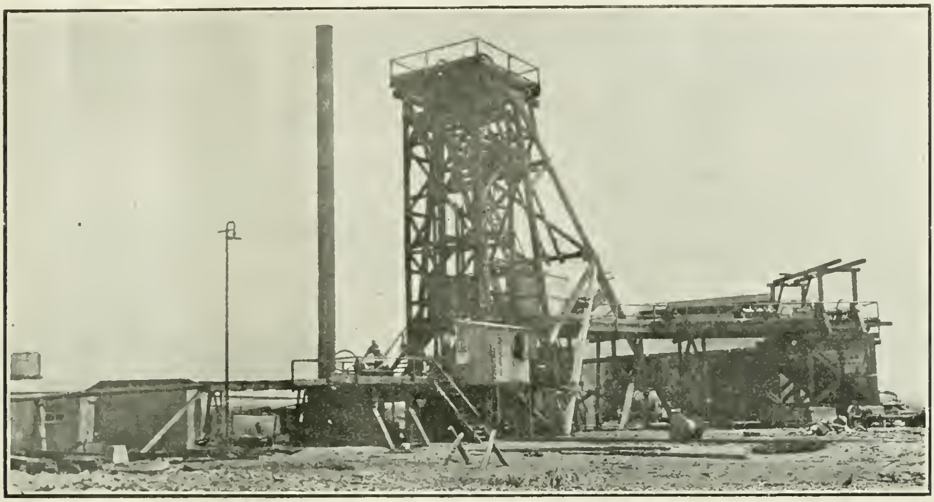
Modderfontein East Official Statement.

THE BOARD'S EXPLANATION.

During the past week we have been inundated by letters from and visits and deputations of share and debenture holders in this company. We have refrained from publication of the letters received and from comment upon the various statements made to us pending receipt of an official statement by the Board, which we have urged should be made with the least possible delay in order to contradict the allegation that there has been anything in the nature of supressio veri suggestio falsi in the conduct of the recent affairs of this company. The official statement as under was received so late that comment on it will have to be reserved for our next week's issue. We would here merely remark that after our conversation with Mr. Max Honnet last week we had an interview with Sir Lionel Phillips, and we believe it is largely due to Sir Lionel's influence that an official explanation of the company's position and concrete proposals for further financing the venture have now been made.—



Modderfontein East: No. 3 Shaft.

"Shareholders were informed at the special general meeting held on the 21st December last that the Board had concluded an agreement for the purchase of the Simmer Deep-Jupiter joint reduction plant on advantageous terms, viz., £110,000, payable in three instalments over a period of one year. At the same meeting, and also at the annual meeting, held on the 7th December, reference was made to the further funds required: (a) for dismantling, additions to, and re-erection of the Simmer plant; (b) for additional general equipment underground and on the surface to enable the mine to produce the larger tonnage of ore required; and (c) for extended development, so as to still further strenghthen the ore reserve position.

As shareholders know, it was the Board's intention to proceed with the erection of the reduction works at the earliest possible moment, assuming, of course, that the necessary capital could be secured. As a means to that end the directors sought from shareholders, and were granted, power to create and issue shares equal to the number that may not be taken up under the four-year option and such number as may not be absorbed by the debenture conversion right; they were also given authority to issue 122,124 shares, being the number of shares not called up under the three-year option, and these latter, together with 61,582 shares in reserve, were recently issued at par, under guarantee of the Central Mining and Investment Corporation, Limited. That guarantee resulted in that Corporation taking up 170,082 shares. The present condition of the market makes it improbable that any of the existing option rights will be exercised, unless some very marked and unexpected change takes place.

Never in the previous history of the Witwatersrand have times been so unpropitious for raising large sums of money, and your Board has, therefore, after very thorough study of the reduction works and all that is involved rests upon the erection of the new plant.

The cost of labour and materials is still practically at the peak level, and the estimate of the amount required over and above the company's present resources to pay off the debentures on the 31st July next and to complete the whole capital expenditure programme, as above indicated, is about £1,100,000.

The advantage of proceeding now with the construction of the reduction works and all that is involved rests upon the higher profits derivable from crushing 40,000 or 50,000 tons a month with your own plant on the mine, as against 25,000 tons with the Apex plant, now in use, and that advantage would be considerable. But, on the other hand, the raising of the total amount needed, if procurable at all during the present period of financial stress, would necessitate the offer of extremely attractive, and therefore, for the company, very onerous terms.

In view of the state of the share market and the current price of the company's shares, financing by that medium is, for the time being, impracticable.

Long term loans are almost unobtainable, and the Board therefore deems it wise to tide over the existing critical period by a temporary loan. The Central Mining and Investment Corporation, Limited, has consented to grant a loan of £400,000 at 8 per cent. per annum from 30th June next, repayable on the 31st December, 1922, and secured by first mortgage on the property and assets of the company. They stipulated for the right to convert the loan into shares at par during that period, and the Board have accepted the loan on condition that the Ceneral Mining and Investment Corporation, Limited, are to afford shareholders the opportunity of participating. The lenders have agreed to allot, pro rata to application, up to three-fourths of the loan, with option rights.

The company's cash resources amount to about £200,000 to-day, and the procedure outlined above will permit the liquidation of the debentures at due date, and should also provide adequate funds for the continuation of an extended programme of development on the mine, while crushing operations at the Apex plant will continue on the present scale.

During the period in question a considerably greater knowledge of the mine will be made available, and assuming fair values attend the development—very necessary in view of the magnitude of the financial requirements—it should be possible with the return of normal times to procure funds on far more favourable terms than the conditions of to-day would impose.

Shareholders will be invited to participate in the abovementioned loan by circular to be issued at a later date."

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WANE OF MINING—CAN AGRICULTURE AND INDUSTRIES SUPPLY THE DEFICIENCY?—NEW MINING LAWS REQUIRED—THE PRESUMPTIVE WEALTH OF THE NORTH RAND.

(By W. P. Taylor).

We account the following article one of the most important communications which it has been our privilege to publish for a long time past. It is written by Mr. W. P. Taylor, well known as a Rand Pioneer, and one who has been closely identified with mining and agriculture since the early days of mining in Kimberley and the Rand. Mr. Taylor voices thoughts that must be uppermost in the minds of all thinking residents of Johannesburg at the present time. The gold mines are languishing: can agriculture and industries take their places and compensate the community for the vast curtailment of revenue and of spending capacity which contraction of the gold mining industry will entail? Mr. Taylor thinks not, and a great many people are in agreement with him. Our contributor believes that salvation may come from extensive prospecting, reform of the mining laws, and by a policy of encouraging capital to come into the country, instead of endeavours to drive money away from it.

Having read in this morning's paper Sir Lionel Phillips's grave warning on the imminent decadence of the gold mining industry, and also the evident embarrassment of the Hon. the Minister of Railways over the present deficit, I am tempted to write you a few of my impressions on some of the things that I cannot fail to observe. I may say that I have been associated with various undertakings, and through the many unconsidered difficulties that existed and cropped up during their development many of them failed to mature. I make no apology for myself, but I feel certain that in any other country I would have had a greater sporting chance at least than I have had in this country. Now with regard to the present condition of things here. We are constantly told that, although the whole world is in distress, this is the one place that is out of the world's maelstrom. Up to a very recent time we had perhaps every reason to believe this, but when you read the ominous warnings of to-day, are we still free? I have personally felt for some time that although this country has untold possibilities, many of its people were living in a fool's paradise. Frequently have I discussed the future with leading men of various kinds and asked them what would happen to Johannesburg if the mines gave in, and their reply invariably was that industries and farming would take their place. Well, I have lived long and I have seen many things and in many places, and my conclusions are that it is not absolutely necessary to devastate and destroy with sword and cannon. Kimberley to-day is as silent as a graveyard. If the East Rand and a number of gold mines suspended work, and only a very few mines operated between Benoni and Randfontein, what animation would there be in that area?

An Outlying Transvaal Mine: Mr. Taylor in this article agitates for increased prospecting and development of the outlying areas.

Where are the Industries?

As regards industries, where are they? What are they? During the War many articles that were needed immediately were made. We made boots, and there were blankets and cloth and hats. From evidence available all these are not in the flourishing condition that point to them and others of their nature taking the place of the great mines which are on the eve of going out.

Outlook for Agriculture.

Then as regards farming: Our annual Show will give evidence of great production, but when one knows that the fruit farmers cannot get space to ship their fruits, that there is no great development in shipping meat, that wool and mohair are in decadence, that Australia can supply us with wheat under our cost of production, and that maize farmers cannot compete with Kafirs and the Argentine, one does not, knowing all these things, feel quite comfortable about the ordinary business man's answer that industries and farming will replace mining. I am one of those who hold that a yearly budget in a new country is often a most misleading document. When, in a country like this, single mining undertakings produce wealth equal to the whole country's debt, the fact of a loss of a million or two should not appal its inhabitants. As far as this part is concerned it is really a great mining country.

The North Rand Series.

Only last week the discoverer of its gold, Mr. Fred Struben, visited it and passed unnoticed from our midst. In the course of conversation with him I elicited that he had found rich gold miles to the north of the Rand. Now, as all the strata of the Main Reef are laminated, everything that is to the north for miles underlies the Main Reef, and therefore, if you were to view the Main Reef as leaves in a book, that series of strata would be uppermost and where

Mr. Struben found his gold would lie miles below it. Now, as gold does not float or rise and as all these great bodies of sedimentary strata were at one time sand and mud, and as it is a common thing in the geological history of all minerals to leach out and re-enrich, I would point out the enormous possibilities of further great gold fields lying parallel to the Main Reef to its north. I know that we have great geologists who will tell you that some reef or other underlying to the north is part of some reef or other lying miles to the south, and, without proper testing or sectionising, they state that there are no values to the north. Well, sir, I remember when the Main Reef was marked as only being some twelve miles in circle, and as the line of the reef extended the geology of the day met it, but there were other geologists who took a much wider view; one I could name, the late Mr. J. G. Curtis, through whose efforts deep level mining received its greatest impetus. This gentleman to the day of his death believed in a great gold field existing to the north of the present line of the Main Reef, and although opponents to the theory may not agree, yet there are narrow rich leaders of conglomerate running for endless miles to the north of the present mines, and their existence would not interest a rabbit if they did not carry very rich gold. One I knew of was opened for 10,000 ft. on the surface and for its narrow width gave 5 ozs. to the ton. I have a piece of it which I would be pleased to show you at any time. But all this means nothing when our thoughts are riveted upon one body of conglomerate in a formation some ten miles thick and carrying possibly dozens of untried conglomerate reefs. What I wish to point out is that there, in the unknown, is visible gold for miles, that the man who found this gold is convinced that there are other great reefs to the north, and that such eminent men as Curtis and others had the same thoughts; and what has been and what will be done to unravel and prove the facts? When you come to prospecting, the laws are so bad that no individual dare spend money upon prospecting.

What are the Limits of our Gold Fields?

For many years the Government received immense sums from people who had held on to their claims for years, but to-day they are all abandoned, their money lost, and their faith; the only dividend lies in a shaft or cutting covered over with debris. Well, if this is a great country with untold unknown gold, are we doing anything to find it? Is it not possible that here right alongside of us is as much gold as has ever been mined? Does the gold of Modderfontein and its sister companies terminate at the Daggafontein mine? Is there not more gold beyond the Nigel? Is there or is there not payable gold in the Balfour basin? All these things I want to know, and if you ask me who I am, I will tell you that I am one of the thousands that are on the verge suffering. I am one of the thousands that Sir Lionel Phillips has warned. I am one of those who cannot believe that this is anything but a great mineral country, that the story about industries and farming is not satisfactory and that we should to-day re-model our gold laws. We should search here at our feet and beyond on the lines of the great reef and find surface mines to give employment at once to our thousands of unemployed. Beyond that, the ownership of minerals should be examined, for thousands of valuable mineral farms are being tied up by land companies and others. In the early days these land companies bought great numbers of farms, and as they sold them they reserved the mineral rights.

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The Land Companies and Oil.

Now I wonder if it was ever contemplated that such a rotten scheme could be played off on a country. Take any of the land companies. They reserve the minerals and *they never work them.* Supposing this had been a great oil country and a few of our hungry houses that bank on the resources of the country had bought and sold the State and reserved the oil? What an object lesson to Republicans as well as Imperialists, for America has made her coal a national matter. England and America to-day are at loggerheads over the oil of Mesopotamia, and here the land companies sell back the land to farmers and reserve all the minerals. Personally, I cannot see how we are ever going to develop with such restrictions.

A great oil company is operating in our midst. Its primary object is shale; it will distill oil from shale and it will require sulphuric acid to get out the ammonia product. There is iron pyrites in the country, but it may be tied up. The minerals being tied up and the holders never working them may cause foreign sulphur to be imported for years to come, and our unemployed may languish and starve in consequence. To-day the dynamite companies are importing sulphur free whilst large bodies of iron pyrites lie untouched. Is it not the duty of a Government to rectify this evil?

Everything that can be done to stimulate new discoveries should be carried out. The law for prospecting is antediluvian. It was a bad law and has ruined thousands of men who gave the best part of their lives to prospecting. Ventures that spent sixty thousand pounds have had to pay twenty thousand pounds and more for licences to search! I have spent tens of thousands of pounds in prospecting licences, and friends of mine have spent many times as much, and it has been a means of impoverishing and disheartening the bulk of those who believed in new discoveries.

The Mines Department Criticised.

Recently a company carried out considerable work and developed reefs. Reefs were found, gold was found, and on the result of assays a large sum of money was being sent from England to prove these reefs. Then suddenly the Mining Department of this State woke up and found that these reefs did not agree with its Department's theories, and cables were sent from the Union Mining Department to warn the would-be investors and thereby the work that I am telling the world to-day is necessary to investigate and assist to provide new gold fields, the only real industry of this part of the country to-day, was immediately stopped. Is there any other part of this world where such an insane act could have been committed? New Zealand advertised a huge bonus for a payable gold field for years. When the great houses here floated companies did the Government examine and warn the public? Is this a precedent for future mining companies? If so, then whatever the undertaking it has in future to come under the aegis of Government scrutiny, and if it is not the law, let Parliament make it so for big and small. But as it stands the British public were willing to subscribe funds to test reefs that might easily have opened up a gold field as big as the Rand, and the Government of this country stopped it. It savours of many of its acts and makes me pause to think. If capital can be stopped so can the man himself. Where are the emigrants that should fill up the fertile lands of the Union? For years we have imported nothing but aliens, and what is the use of a Budget? If there were a surplus of millions and no increase or improvement in the population of the country, no development of its resources, that Budget would be misleading and but waste paper. This country wants better laws for minerals and greater energy and enterprise to open up the wealth that everyone believes is to be found here.

A New South African Industry.

THE BITUMINOUS SHALES OF THE WAKKERSTROOM DISTRICT.

Within the past few months a new industry has been born in South Africa. Potentially, if not actually and presently, the bituminous shales of the Wakkerstroom district constitute a source of supply of crude oil in considerable quantities and three different companies have been engaged in the preliminary prospecting of the oil shale areas which they have acquired. The district of Wakkerstroom lies in the extreme south-eastern corner of the Transvaal and until quite lately it had never assumed any measure of importance from a mineral point of view. It is essentially a pastoral area with long stretches of high veld plateaux which merge into the hills overlooking the Pongola Valley and the rugged contours of Northern Natal.

Areas that for long Lay Fallow.

Although the existence of combustible shales in this area has been known for the past 30 or 40 years it is only recently that any effort has been made to exploit these occurrences. Serious attention does not appear to have been given to these bituminous shale measures until 1913 when the Union Government decided on obtaining expert advice in regard to the prospects of oil in South Africa. The Union Government selected Mr. E. H. Cunningham Craig, B.A., F.G.S., formerly Government Geologist of Trinidad, and one of the leading British petroleum experts, to make an exhaustive investigation. His report, dated 26th September, 1913, which was issued as a Parliamentary blue book, shows, inter alia, that the prospects of finding liquid oil either in shallow formations or at depth are extremely remote; on the other hand, with regard to the possibilities of an oil shale industry he appears to have been most favourably impressed. In fact he urged the Government to encourage the opening up and development of the various oil shale deposits of the country.

Mr. Craig's Investigations.

Oil bearing shales are to be found over a considerable portion of Eastern South Africa and Mr. Craig investigated the conditions obtaining in numerous localities. Certain farms in the vicinity of Wakkerstroom engaged the greater part of Mr. Craig's attention and he appears to have been favourably impressed with the prospects of this shale belt and particularly with the occurrence on the farm Kirkboschfontein, which is now owned by the Wakkerstroom Oil Company. In the course of his report Mr. Craig stated: "All the evidence to hand at present leads to the belief that an oil shale industry has good prospects of proving successful, and I would urge that no effort should be spared to ensure that a fair test of its possibilities be made." But despite Mr. Craig's optimistic views nothing was achieved either by the Government or by private individuals towards establishing the real commercial value of these shales until the latter part of 1919, when a number of Johannesburg business and professional men formed a company styled "The African Oil Corporation, Ltd.," with a capital of £100,000 in shares of a nominal value of ten shillings each. The success which has attended the promoters of the African Oil Corporation up to date has certainly exceeded the most optimistic views held at the time of the flotation. The company at once commenced preliminary development of the properties. Drives were made into the hills along the horizon of the bituminous shales and the width of formation was determined. Soon after the formation of the African Oil Corporation a number of mining men visited the properties. Amongst the visitors were Messrs. W. T. Anderson (formerly General Manager of the East Rand Proprietary Mines) and Mr. Hans Meyer, of the engineering staff of the Central Mining and Investment Corporation, Ltd. As a result of these visits negotiations were initiated for lengthier and more thorough examination of the bituminous shale measures. This, of course, was granted and analyses of oil contents made by the Corner House technical staff closely confirmed the assay made by Mr. Mills Davies. This was excellent business for the African Oil Corporation. The promoters certainly had no idea when they formed the company that within a few weeks of registration they would be negotiating with such a powerful corporation as the Central Mining and Investment Corporation.

But the Central Mining and Investment Corporation did not exercise this option, neither did Brunner, Mond & Co., nor the J.C.I., who subsequently investigated the proposition. Another powerful organisation, however, has apparently taken what the other firms declined.

Enter the Royal Dutch.

We have in recent issues referred to the interest acquired in the Wakkerstroom oil shale areas by the Royal Dutch Shell group and in confirmation of the statements contained in this journal it is interesting to note that the *Financier*, of London, states that the engineer of the Royal Dutch Petroleum Company, who was recently sent to investigate the possibilities of the African Oil Corporation's property in the Transvaal, has sent a favourable cable to his principals. A six months' option will be accordingly fixed pending more exhaustive examination of the shale deposits. The engineer recommends that if the option be exercised half a million sterling working capital should be provided. A bulk sample of shale has been forwarded to Holland, and if the results equal what was obtained in the trials in Scotland and the deposits prove extensive, there is little doubt that the Shell interests will add another centre to their world-wide activities. The bulk of samples of Scottish Pumpherston Oil Company averaged 31.75 gallons of crude oil to the ton, and 37.18 pounds of sulphate of ammonia, compared with the Pumpherston Company's own shale average of 18 gallons of crude oil to the ton. Fractionation of crude oil carried out by the Scottish Oils, Ltd., yielded 97 per cent. of marketable oil, which is described as extremely satisfactory.

Sir H. W. A. Deterding, Chairman of the Royal Dutch Shell Group.

A Lack of Enterprise.

It does not say much for the enterprise of the large local mining houses that they should have allowed a small group of business men not connected with the mining industry to snatch these plums which have long lain almost under their very noses. However, the fact that the Royal Dutch Company have been quick to realise the attractive prospects of the venture foreshadows increased activity, and if a firm of experience and presided over by Deterding acquire an interest in the new industry and erect a treatment plant the embryonic oil shale industry of South Africa will certainly go ahead.

Legislation Affecting Mining in the New Assembly.

RAILWAY RATES ON COAL—OPENING UP OF ZULULAND HARBOURS AND CONSTRUCTION OF NEW LINES.

The new Parliament has already begun to concern itself with matters which closely affect the mining industry.

Sir Abe Bailey's Inquiries.

In the Assembly on Tuesday, for instance, Sir Abe Bailey asked the Minister of Railways and Harbours whether, in view of: (a) The considerable reduction in oversea freights to competitive markets, which caused a corresponding contraction of the area within which South African coal for export could compete; (b) the fact that the receipts from coal traffic had exceeded the estimate up to the week ended February 26th last by £1,246,770; and (c) the fact that the conditions arising from the War which enabled the railway rates on bunker and export coal to be raised from time to time had now disappeared—the Government would take immediate steps to reduce such rates to a point which would enable the coal trade to compete in such oversea markets as from its geographical position and its low cost of production it was fairly entitled to do, and so prevent a serious depression in such trade, with the consequental loss in receipts to the Administration and creating unemployment.

Railway Rates on Coal.

The Minister replied that the Administration had been watching this question closely for several months past, and had already reduced the railway rates on bunker coal by 8s. 11d. per 2,000lbs., and on export cargo coal to certain destinations by 8s. per 2,000lbs. The rates for bunker coal for ships taking full cargoes of export coal had been reduced by 8s. per 2,000lbs. The rate for export cargo coal to certain places in the Red Sea and the Indian Ocean had been increased by 2s. per 2,000lbs., making the rate, say, from Witbank to Lourenco Marques, 9s. 3d. per 2,000lbs., or 4s. 2d. per 2,000lbs. in excess of the very low pre-war rates.

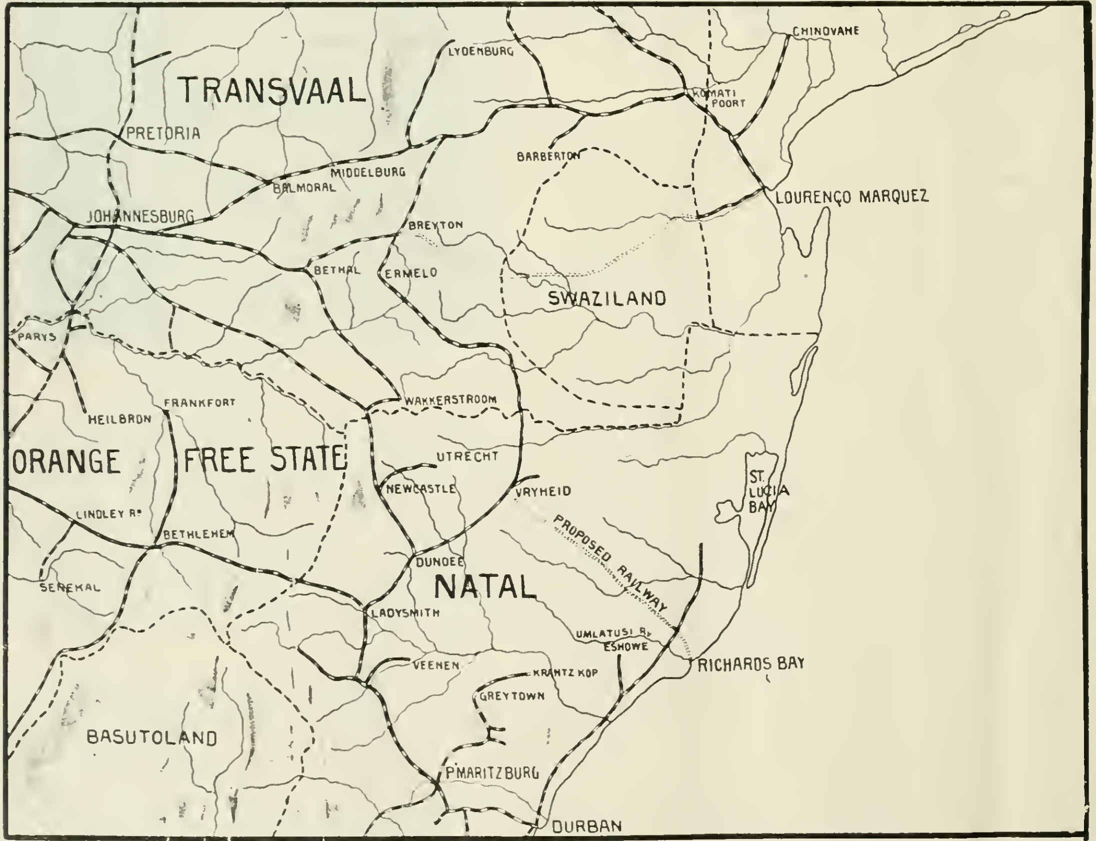
The position to-day with respect to bunker coal, he went on, was that the Administration rates were 10s. per long ton less than on December last, whereas the collieries were charging higher pit-head prices than in December to the extent of 4s. 6d. per long ton in Natal and 2s. 3d. per long ton in the Transvaal.

The alteration in railway rates recently introduced involved a sacrifice of railway revenue equal to over £1,000,000 per annum, but the effect of this sacrifice had been partially nullified by the increased prices demanded by the collieries.

This subject of rates was dealt with at some length by Mr. Buckle in his speech at the annual meeting of the Chamber of Mines, on Monday.

New Railways and Ports.

Another matter which materially concerns the coal trade is the construction of new railway lines. It will be recalled that in our issue of January 15th we dealt at some length with the opening up of new ports on the Zululand coast, and the construction of new railways to develop the Piet Retief coal fields. In this connection it is interesting to note that Mr. Van der Merwe (Wakkerstroom) moved in the Assembly that the Government be requested to consider the advisability of including in its proposed railway programme a line from Wakkerstroom *via* Piet Retief through the southern part of Swaziland to St. Lucia Bay, in order to develop the rich mineral deposits of the district. He did not anticipate, he said, that the present financial position would last very long, and the day would come when new lines could be undertaken. The line proposed by him would run through a fertile agricultural and a rich coal district, which was also full of oil and gold deposits, with rich prospects for the future. There was a private company which was prepared on certain conditions to build the railway through the districts indicated, but he considered that the prospects of the district were so great that the matter should not be left to private enterprise.



In the House of Assembly during the past week the member for Wakkerstroom moved for the opening up of the Piet Retief coal fields and the exploitation of St. Lucia Bay. The accompanying map illustrates the situation of St. Lucia and Richards Bays with reference to existing and projected lines and the coal areas. The whole subject of the development of this portion of the Union, the construction of new railways and the exploitation of coal-exporting harbours on the Zululand coast was dealt with in our issue of ten weeks ago.

Platinum: Its Occurrences and Treatment.

A NOTABLE REVIEW OF A SUBJECT OF INTEREST IN SOUTH AFRICA TO-DAY.

(By B. Dunstan, F.G.S.).

Mining Operations and Metal Values.

The mining of platinum-bearing gravels is conducted in very much the same way as gold mining, and the recovery of the platinum in sluices, dredges, &c., follows on similar lines, so that a description of the various operations is hardly necessary. Attention might be drawn to the numerous details of platinum mining by dredges and other means on the Ural fields of Russia in the monograph by Duparc and Tikonowitch (*see* under Bibliography) which is the latest and most comprehensive work on the subject. There is one method of mining, however, which is only carried on in the platinum industry, although it would be applicable to the working of any alluvial deposits if they happen to be situated in ice-bound areas. The Ural deposits, in part, are in very loose and watery ground and troublesome to exploit, but the miners take advantage of the extreme cold of the region by allowing the workings to freeze, and then operating on the frozen ground by thawing it with wood fires. If the face of the wash in the workings becomes frozen to a depth of, say, 1 ft., then the thawing or burning out will extend for about 6 in. or to a safe limit, the workings then being allowed to freeze again to the maximum depth and the thawing repeated. The operation is simple, but experience is required in deciding how far to proceed with the burning out, otherwise the ground collapses and the workings become flooded, and another start has to be made.

In the Urals the amount of platinum in the wash is extremely variable, the average yields for one period of years being over 1 oz. to the ton of washdirt. Other years' yields have shown about half this average, while latterly the returns have not been more than 1½ dwt. to the ton. The thickness of the wash varies from less than 1 ft. to several feet, and 3 or 4 ft. has been estimated as a general average thickness throughout the platinum-bearing country. The extent of this productive area is said to be about 170 square miles, and between 15,000 and 20,000 miners were employed on it before the War.

At Colombia the mining operations in the past have been very irregularly carried on, but are now being conducted systematically with up-to-date appliances, the platinum wash being treated by dredges.

A sample from the Sumatra bornite-garnet-wollastonite-limestone deposits made up of partly decomposed wollastonite yielded on assay 0·17 oz. of platinum and 0·11 oz. of gold per ton, and it was observed that where the copper values in the ores were lowest the platinum values were highest.

At Westphalia, in Germany, the ores contain from 12 dwt. to 1 oz. 4 dwt. of platinum per ton, and are therefore rich compared to the Ural deposits, the payable minimum being considered to be 8 gr. of platinum to the ton. At Sierra del Ronda, in Spain, about 8 gr. per ton has been obtained, which is deemed sufficiently encouraging to warrant further extensive prospecting operations being undertaken.

At Broken Hill, New South Wales, the platinum values in the lode vary from a trace to 16 dwt. to the ton, a felspathic ochre containing about 1½ oz., and a ferruginous claystone about 61 dwt. per ton, palladium and iridium also being present with the platinum. Picked specimens of the ore were also found to contain from less than 1 per cent. up to 10 per cent. of copper, from 0·35 to 4·33 per cent. of nickel and from traces up to 0·27 per cent. of cobalt (Mingaye). At Fifield the alluvial deposits have yielded 6 dwt. 2 gr. of platinum and 1 dwt. 23 gr. of gold to the ton, but there does not appear to be much promise of a continuation of these returns on account of the limited extent of the washdirt in the lead. Notwithstanding which, 400 loads recently obtained from ten claims averaged a yield of 4 dwt. of platinum and ¼ oz. of gold.

Prospecting for Platinum Metals.

Prospecting for the platinum group of metals in lodes may present many difficulties on account of the trouble in identifying them when in association with other minerals. Rich deposits of native metals, such as platinum and osmiridium, can be easily recognised by the experienced prospector, while other deposits containing platinum in complex ores might be passed over without the presence of the platinum being suspected.

Perhaps the first thing to do would be to acquire sufficient mineralogical knowledge to be able to identify the minerals with which platinum or its allied metals are known to be associated, and another important desideratum would be the ability to identify the kind or classes of country in which the platinum minerals would be expected to occur.

Probably the best course to adopt in a prospecting expedition would be to include in the party one with a knowledge of rocks and petrological work, and who would be able to detect and estimate native platinum in samples of ores not too complex, and in addition to include a number of miners experienced in prospecting for alluvial deposits, such as in following up indications in creeks and gullies and taking dish prospects from "wash" appearing favourable for the occurrence of heavy minerals.

In Queensland many localities are known which should be prospected for platinum, more particularly those about Cawarral, Canoona, and Marlborough, near the coast and to

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the north and north-east of Rockhampton, where an enormous area of serpentine exists. This belt is known to be auriferous from almost one end to the other, and also to contain several chromite deposits. The geological conditions, however, are those laid down for the occurrence of platinum, and if the latter metal were proved to be absent it would show, at least, that the "indications" of its occurrence are not always to be depended upon. Large chromite deposits are known near Tangamull, on the Cawarral field, and near Glen Geddes, midway between Rockhampton and Marlborough, but other unimportant deposits are also known, while numerous diorite outcrops are to be observed about Marlborough, Princhester, Canoona, and Kunwarara and other localities traversed by the Rockhampton-Mackay railway line.

It might be mentioned, however, that although the vicinity of chromite deposits appears to be the most favourable for the occurrence of platinum, experience has indicated that some rocks poor in chromite have higher values in platinum than those rich in chromite.

The serpentines at Kilkivan, Marodian, and Black Snake to the west-north-west of Gympie, are mineral-bearing in many places, with gold, copper, nickel, cobalt and manganese also present in some of the lodes. Fat Hen and Angella Creeks, where platinum has recently been reported to occur, are in serpentine and schist country, the former creek heading in an area of country containing copper, nickel, cobalt, and gold.

The serpentine areas at Kandanga to the south-west of Gympie are probably a continuation of the serpentine at Black Snake to the north-west, but so far no chromite deposits are reported to occur in them, although large lodes of manganese are quite common in the slates adjacent.

Close to the Port of Bowen at Mount Pring an area of serpentine was discovered a few years ago, and the preliminary examination then made indicated the presence of chromite in the gravels of the water courses, and the conditions which prevail there are ideal for the concentration of alluvial platinum from decomposed serpentine.

Near Pine Mountain close to Ipswich, and Mount Crosby near the Brisbane River there are areas of serpentine country which contain small irregular deposits of chromite and magnetitie, and in which peridotite dykes have been observed. The areas are small but should receive attention.

The Peak Downs Copper Mine at Copperfield near Clermont which yielded such phenomenal returns many years ago contains a series of mineral lenses separated by serpentinous schist formations. The possibilities of platinum occurring with the gold in the copper ores has not been considered, although chromite boulders have been observed along the pronounced lode outcrop, which extends for many miles. The serpentine trends southerly from this locality and makes its appearance below the alluvial deposits at the Anakie Sapphire Fields.

Serpentines occur in North Queensland at Herberton, Koorboora and Watsonville in an important area of mineral-bearing country, and also at the Calliope and Mount Rainbow goldfields in the Gladstone district, their occurrence also being recorded at Mundubbera near Gayndah where they form a belt in slate country.

The old Hector Mine close to Rockhampton contains a slightly nickel-bearing pyrrhotite with copper pyrites and iron pyrites in a hornblende rock closely associated with a gold-bearing quartz lode. The gold was the only mineral saved, and no attention was given to the other content of the ore.

The copper deposits at Mount Chalmers and Warminster at Cawarral are on or near the junction of serpentine and slate country. Serpentine outcrop close to Warminster and a serpentinous slate is associated with the copper sulphides and oxides in the mine there, and in both localities the slates are much impregnated with barytes. Altogether, the conditions which prevail are indicative of the presence of platinum with the gold and copper in this neighbourhood.

The wollastonite type of mineral deposit is represented at the Mount Hector copper mine near Many Peaks in the Gladstone District, in which the copper occurs as bornite in the wollastonite, with limestone, garnet rock, and granite as the associated country rocks, with serpentine in the district. Probably no thought has been given to the occurrence of platinum, but the conditions here are similar to those prevailing where wollastonite has yielded platinum.

The coastal beaches should also be examined in the vicinity of rivers draining serpentine areas. As stated previously the northern side of the entrances of the streams are favourable for the accumulation of minerals associated with platinum, because the northern trend of the ocean currents close to the shore results in the sands drifting in that direction. Further, it should be noticed whether beds or seams of black sand occur in any locality before any operations are undertaken, as without such deposits being present platinum could not be expected to occur. The black sand accumulates on the beaches only during rough weather, when small clean bands of it are formed on the surface of the siliceous sands and sometimes quite free from other mineral. The platinum and other heavy minerals in the black sand are exceedingly fine and the question has been raised whether the platinum grains, in being the finest of all the assortment of minerals, would gravitate in time into the coarser and more open sands below or remain in the bands of fine black sand.

Currumbin Beach near Point Danger has been the site of several prospecting operations for gold, and in places the sands there have been found payable to wash in sluice boxes, but platinum and osmiridium have only been found in traces. Further north along the beaches the quantity of these minerals present becomes less and less, although the black sand accumulations are just as persistent. To the south of Point Danger on the New South Wales coast the platinum values in the sands would no doubt be greatest near the outlet of the rivers which drain the serpentine area.

The coastal beaches north of the Fitzroy River near Rockhampton should also be examined, although the prospects would not be very favourable on account of this river draining an enormous area of country, of which the serpentines are only a very small portion. Palm Creek and other watercourses in the vicinity of Carwarral and Herbert's Creek further north head in country containing serpentine, and possibly good results would be obtained by an examination of

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the black sand accumulations where these and other small creeks enter the ocean.

Finally it must be remembered that coastal black sand deposits might form from the disintegration of many kinds of rocks and may contain no chromite, and if so would probably not contain platinum or osmiridium, so that the first test to be applied would be to determine the presence of this platinum and osmiridium indicator. It might also be mentioned that there are numerous carbonaceous black sand deposits on many parts of the coast and on some of the islands, but these could not be mistaken for the black sands containing the heavy minerals.

Metallurgical and Chemical Notes.

Properties of Platinum Group Metals.—Pure platinum is tin-white in colour, has a specific gravity of 21·5, a hardness of 4 or 5, and is very malleable—although less so than gold and silver. Its fusing point is, 1,750° C., which is nearly twice as high as that of silver. It expands less on heating than any other metallic element, but has the same expansion as some nickel steels, which in consequence are sometimes used as a substitute for it. It is not acted upon by nitric, sulphuric or hydrochloric acid, but is soluble in nitro-hydrochloric acid—one to two parts respectively. It is corroded by sulphides, sulphates, phosphates, and arsenides, more particularly those of easily fusible metals such as lead, bismuth, tin, mercury, antimony and zinc, if heated in contact with them, and is also affected by various other inorganic and organic compounds. Unlike gold and silver, it will not amalgamate with mercury unless sodium or some special reagent is present, and if the former be washed out with water from a platinum amalgam containing it the platinum itself becomes dissociated from the mercury. Platinum resists oxidation even at high temperatures, and thus becomes a useful metal in chemical and electrical work.

Palladium is a silver-white metal, as hard as platinum, although not so ductile. Specific gravity, 11·97. When heated first becomes blue, and then silver-white at higher temperatures, but is infusible. More easily acted upon by acids than any other platinum group metal, but has better catalytic properties than platinum. At normal temperatures will not tarnish, but will oxidize on the surface when heated.

Osmium is a bluish-white metal somewhat like platinum. Specific gravity, 22·477. Infusible, but easily oxidised and at a high temperature volatilizes. More closely related to ruthenium than platinum.

Iridium is a white metal as bright as steel. Specific gravity 16·19. Not attacked by acids. Forms a fusible alloy with platinum.

Ruthenium is a lustrous white hard metal. Specific gravity, 12·06. Has catalytic property when finely divided, and is superficially oxidised at a bright red heat.

Rhodium is a white hard malleable metal. Specific gravity, 12·1. Has catalytic property, and is characterised by rose red salts.

Reduction of Platinum Ores.—The platinum in the impure native alloys is first converted into lead-platinum alloys by a furnace fusion with galena (lead sulphide) on a clay hearth, the sulphur combining with any iron present in the ore to form a regulus. Osmiridium if present will not alloy with the lead, and settles to the bottom of the charge, being heavier than the alloy. The removal of the iron and sulphur from the platinum-lead is effected by first introducing ground glass to make a slag and to absorb the iron, and then litharge (lead oxide) is added to remove the sulphur, after which the platinum-lead is cupelled to drive off the lead, a residue remaining which contains all the platinum and perhaps palladium, rhodium, osmium, and iridium.

In treating platinum-bearing ores, one English firm advertised before the War that it would undertake the work, charging £60 per ton for the treatment, and buying the metal at market prices. In refining scrap or crude platinum the charge is about 30s. per oz., but the cost of doing so is stated to be only about 30s. per lb.

Refining Platinum.—The crude platinum obtained by cupelation is sometimes fused with lead and then granulated and afterwards treated with weak nitro-hydrochloric acid. It is also treated direct with this acid to dissolve any gold which might be present, and then with strong acid to dissolve the platinum, a residue of iridium being left behind if this metal is also present. The platinum in the solution is precipitated as a chloride, this compound then being decomposed by heating to redness to form spongy metallic platinum.

Gold Movements.

How gold comes and goes on the ebb and flow of the tides of commerce is suggested by the imports and exports of the standard metal, says the *Mining and Scientific Press* of San Francisco. In 1920, according to the Federal Reserve Board, the stock of gold in the U.S.A. was increased by 106,600,000 dollars, as against a net loss of 291,700,000 dollars in 1919. Imports of gold amounted to 428,700,000 dollars, while exports were 322,100,000 dollars. Of the imports, no less than 274,000,000 dollars, equivalent to 64 per cent of the total, came from Great Britain, whereas of our exports 60 per cent. was consigned to Asiatic countries.

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.

SURVEYOR'S CERTIFICATES—March, July and October (Extra) Exams. 100 %, 50 % and 60 % respectively of S.A. total.

MANAGER'S CERTIFICATES.—Two last Exams. (Sept., Jan.) 17 out of total 23 in S.A.

OVERSEER'S CERTIFICATES.—Two thirds of the S.A. total for year

COAL CERTIFICATES.—Candidates being enrolled.

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Exhibits at the Mining Exhibition.

SAFETY FIRST DEVICES.

The Mining Exhibition held in the premises of the Amalgamated Technical and Scientific Societies Club house during the month has been an entire success, and has been attended by many hundreds of interested visitors. We much regret that extreme pressure upon our space this week prevents us from reviewing the various exhibits in detail, and in this issue we shall content ourselves with a statement of the prize winners in the Safety First Competition: Prizes presented by the Rand Mutual Assurance Company. 1st prize, silver medal, S. B. N. Hill, manager, Breyten Collieries, Ltd., Breyten. A brief description of this is as follows:– Object: This holder, which consists of a shaped pattern of waterproofed and adhesive sheet, is to form a safe and easy means of attaching and holding secure the fuse into the detonator, waterproofing the joint between same, and securing these two parts firmly in place when inserted into the primer cartridge. Use: The fuse having been cut square and inserted into the detonator, the body of the pattern is wrapped tightly round the joint, about ½in. overlapping the detonator and 1in. wrapping round the fuse, the adhesive side being inward attaches itself firmly to both fuse and detonator, then adheres to itself on subsequent turns. The primer cartridge having been prepared for the reception of the detonator by making a hole through the wrapper end into the cartridge, the detonator is inserted, and the adhesive ends of the pattern are now carried down the sides of the cartridge and pressed firmly on to the wrapper. Advantages: (a) Holds fuse firmly in place in the detonator, increasing the grip obtained by crimping. This practice might even be dispensed with. (b) Waterproofs the junction between the fuse and detonator, eliminating the use of grease or tallow, especially useful in wet holes. (c) Holds the detonator with inserted fuse in position in the primer cartridge, preventing inadvertent withdrawal of same, and doing away with the present method of tying with string. (d) Does not allow the detonator to be buried or inserted too far into the cartridge, preventing premature ignition or burning of explosive, also protects the detonator from rubbing contact during stemming or charging up. (e) Can be used on any type of explosive cartridge; also applicable to electrical detonators. (f) It is quickly and easily applied, is cheap, reliable and safe, having no metallic parts and fulfils all conditions called for by Mining Regulations (Explosives Section). In the Safety First Competition the second prize (bronze medal) was awarded to Jas. P. Young, Meyer & Charlton G.M. Company, Ltd., for his safety clamp for mill stems.

Outlook for the Ferreira Deep.

The position of the Ferreira Deep was very clearly explained by the Chairman, Mr. F. Raleigh, at the annual meeting held this week. A full report of the meeting appears in another part of this issue, and in addition to reviewing the results of operations last year, gives the figures for the first five months of the current financial year. The gold premium, of course, played a large part in improving last year's profits over those of the previous year, and it is satisfactory to note that the consulting engineer expects that the better yield per ton during the last quarter of the year will be maintained during the current year. The whole position is summed up in the Chairman's concluding remarks that the mine was now approaching its end, and that for some years past the tonnage developed had not equalled the tonnage mined. "It is difficult," he said, "to determine how much longer they may continue profitable operations, as this depends so largely on the price of gold and working costs factors." A dividend of 7½ per cent. has now been declared for the period ended March 31.

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AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

COSTS AND EFFICIENCY.

Although the President, Mr. Buckle, did not belabour the supremely important question of reducing working expenditure on the Rand at Monday's meeting of the Transvaal Chamber of Mines, Sir Lionel Phillips, a former President of the Chamber, dealt with the subject with his customary vigour, and in another portion of this issue we have commented on Sir Lionel's remarks and his timely warning to the Rand and the country at large as to our fate if this great open sore of the industry is not healed, and healed speedily. Sir Lionel's utterances may be interpreted in certain quarters as an exaggerated view of a state of affairs which no one can deny is at least unsatisfactory. But we are convinced that his gloomy forebodings of the future of Johannesburg and of the Rand, unless we can make gold mining profitable on a basis of a six pennyweight recovery with gold back to standard rate, are by no means overdone. We have uttered similar warnings for months past. We have pointed out that "we are merely being swept off the rocks of perdition by the trade winds of the gold premium."

We have weathered the War period only to find ourselves perilously close to the rocks of disaster. Our after-War hopes have not materialised. Increased wages and shorter hours, abnormal prices for stores and material, poor labouring efficiency, strikes, and the virtual exhaustion of many of our older mines are the stern realities which stand grimly in the places of the many cherished illusions which we held would materialise in the wonderful days of *après la guerre*.

The old Central Rand section of the greatest gold fields the world has ever known or ever is likely to know has been on the brink of disaster, and were it not for the development of the Far East the industry of the Main Reef series, taken as a whole, would be unprofitable and unattractive.

For the existing state of affairs we hold that the bosses of the industry are in some degree to blame as well as the workers. And in the lengthy article appearing in the forefront of this issue of the journal we have given some of our reasons for thinking that the administration of the mines as well as the firebrand agitator and the worker who has proved such easily moulded clay in the hands of these tyrants of democracy is to a certain extent responsible for the present pitiable plight of the mines. On the one hand supine and often inefficient administration, coupled with questionable finance, have sadly undermined the foundations of our industry. And as to the other we need not labour the point that until recently demands and strikes and flagrant breaches of contract, all engineered by the enemies of progress, have resulted in many mines becoming unpayable ventures even with gold at five guineas an ounce.

The present situation on the Rand is very well defined by a gentleman who until recently occupied a very important position on these fields and who writes us as follows:

"Sir,—I would like to say how much I enjoyed reading your articles on the industry generally, and particularly your criticism of the lay heads. There is no doubt that, where their policy has not driven out some of the best men connected with the industry, it has resulted, even in the case of consulting engineers and managers, in an attitude of 'don't care a damn so long as I can hold my job.' Naturally the subordinate staff take their cue therefrom, with the result that there is no one to commend good work or to criticise bad work—the one test of merit being, 'Are you *persona grata* with the labour leaders or not?' One sees the influence of laymen again in a recent case where gross and proved incompetency has been rewarded by promotion. What can be hoped for where such things prevail? If you are sufficiently interested you will find in a certain appendix to evidence before the Low Grade Mines Commission, information that will surprise you. In this appendix I tried to bring out the real efficiencies without the complication of increased wages, by comparing 1914 efficiencies with those in 1919 on the basis of output per white underground, output per native underground, and stores consumed per ton. I did not deal with the matter on a group basis, it would have been too pointed, but the tale is there, and it will interest you. I hope you will handle severely the joint committees, the shop steward committees, and all such impediments to managerial authority and discipline on the mines. These exist only for the glorification of the labour leaders; they serve no useful purpose, and are a deterrent to efficient working. Then again I am afraid there are a lot of instances of men in jobs for which they are quite unsuited, and important jobs too. The effect of this, of course, is that the subordinates are badly and often quite wrongly chosen. This exists all along the line, and of course the only way to alter it is to begin at the top and sack the incompetents there. I could go on for a long time, but have written sufficient and hope you may perchance glean a point or two for future use.

We are not at liberty to divulge the name of the writer of this letter. We wish that we were able to, but we can assure readers that it is an entirely unsolicited epistle, written by a fully qualified mining man who has a most intimate knowledge of the Reef. We sincerely trust that what he has written and what we have recently written on the subject will be taken to heart not in any spirit of carping prejudice but as a real effort to do something to ensure the continuance of mining.

We must reduce working costs and raise efficiency. It is satisfactory to learn from a mine manager with whom we chatted during the week that signs of a reduction in expenses, of a rise in tonnage output, and of a partial disappearance of that spirit of insubordination which has recently been so prevalent along the Reef are forthcoming. But we want much more than signs. We want to see these indications speedily grow into an unmistakable feature of the current year's history.

Mining Notes & News.

Van Ryn Deep.

We understand that development in the western section of this property is showing most satisfactory results. This western portion of the Van Ryn Deep has always been presumed to be of substantially lower grade than the eastern section, and the finding of good ore there materially improves the prospects of this company.

* * * *

Randfontein Management.

Mr. G. H. Beatty, manager of the Randfontein Central, is shortly going on leave, and during his absence this important post will, we understand, be filled by Mr. Mitchell. We should like to congratulate Mr. Beatty on the magnificent work which he has achieved at Randfontein.

* * *

Coronation Syndicate Activities.

The Coronation Syndicate continues to exploit its claims on Wilgepoort, in the Balfour area, and several samples from the 250 feet level at No. 2 shaft recently gave an average assay value of 17 dwts. and an average reef width of 20 inches. The syndicate has also located a second borehole on the farm Luipaardsvlei No. 10, on the West Rand, and drilling is proceeding.

* * * *

Wolhuter Meeting.

Mr. A. F. Mullins presided at the annual meeting of the Wolhuter on Wednesday last, and made a brief but informative speech. He reviewed the figures of the year, and we do not here repeat them, as the speech appears in full elsewhere in this issue. The chief point for shareholders is that the Board will next month consider the dividend position, the actual amount of which will depend on the result for this month and April; but, to quote Mr. Mullins' it is not actually optimistic to say that an amount of 3¾ per cent. can be obtained, and if the current two months give good results a payment of 5 per cent. may be passed.

* * * *

Congo Diamonds.

The growing importance and productive potentialities of the Congo diamond fields are well exhibited in a Brussels letter to the "African World," dated 16th February, which states:—In 1920 the Forminière Company was chiefly engaged in prospecting operations. Nevertheless, it maintained its diamond production up to the previous year's level, viz., to about 215,000 carats. The Forminière's activity manifested itself chiefly in prospecting because, first, its prospecting rights had been extended up to 1924; and secondly, it had to carry out works on account of other owners of rights to prospect. The discoveries made by some of these prospecting expeditions have already enabled the Forminière to start the working of diamond fields belonging to these outsiders. On its own concessions the Forminière continued the working of its diamond fields by means of improved methods. Meantime, it also continued to develop the country from the economic point of view, and to improve the conditions of its native labour. In order to obtain the white staff required by the extension of its work, the Forminière has created at Brussels a technical school. The white staff in Africa amounted, on December 31, 1918, 1919 and 1920, to 10, 33 and 107 Belgians and to 18, 15 and 26 foreigners. The native labour jumped from 4,212 people in 1918 to 7,242 in 1919, and to roughly 11,000 in 1920. After his visit to the Forminière diamond exploitations in the Kassai during his recent journey through the Congo, Minister Franck sent a letter to the company, a letter in which he was expressing his satisfaction with the good organisation of the services, the exemplary activity reigning on the diamond fields, and the good relations maintained between the management and the native staff. The work performed by the Forminière in a country which was a desert up to 1909 clearly shows the prominent part played in the opening of countries to civilisation by rich companies owning vast concessions. Since 1919 the Forminière has entered the dividend era, and this after having spent fourteen years without paying a farthing to its shareholders. Then it paid them the statutory interest for each of the years elapsed since its foundation, such as it paid them a super-dividend for the year 1919. For 1919 it paid, too, a dividend to the second-rank shares. At the beginning of 1920 the diamond sales were normal. Early in May a crisis happened, which prevented the sale of precious stones. At present the market is still stagnant, but there are indications that permit a hope of resumption of sales approaching.

* * * *

Mr. Mabson's Far East Rand Reviews.

The "Stock Exchange Gazette," in its issue to hand by this mail, contains the fifth of the interesting series of articles on the Far Eastern Rand, which are being written by that journal's Special Correspondent, Mr. R. R. Mabson. In the issue of March 5th the following interesting table appears:—

Name of Company.	Approximate mine area.	Issued capital.	Dividends declared 1920.	Ore reserves.	
				1919.	Value, 1919.
Producing Mines.	Claims.	£	£	Tons.	dwts.
New Kleinfontein ..	1,805	1,151,540	57,577	2,312,000	5.53
Van Ryn Estates ..	188	500,000	75,000	1,147,170	5.6
Van Ryn Deep	768	1,196,892	777,980	3,200,000	9.1
New Modder	1,301	1,400,000	1,435,000	8,869,700	8.4
Modder B	1,468	700,000	577,500	3,215,100	9.0
Modder Deep	377	500,000	725,000	3,775,000	9.1
Govt. G.M. Areas* ..	2,633	1,400,000	700,000	11,001,700	8.6
Brakpan*	3,387	850,000	380,190	2,484,117	8.74
Modder East* (say) .	2,350	841,796	—	1,755,400	7.75
Geduld	2,481	1,173,513	205,296	2,580,000	7.4
Springs*	3,568	1,267,736	250,671	2,417,298	8.74
Sub Nigel†	1,884	775,000	96,875	284,000	10.0
Totals (say) ..	22,210	11,756,477	5,281,089	43,041,485	‡8.34
Developing Mines.					
New State Areas* ..	2,050	933,000	—	—	—
West Springs*	2,235	531,979	—	—	—
Daggafontein* .	2,059	948,033	—	—	—
Totals .	6,344	2,413,012	—	—	—

* Part or the total claim area of these companies is leased from the Government, for which a proportion of profits is payable.

† To 1,884 claims have to be added 500 claims on Grootfontein acquired for £130,000 payable "not before January 1, 1921."

‡ Average.

Concerning Mines and Men.

Mr. A. Simpson, of Capetown, is on a visit to the Rand.

* * * *

Senator C. G. Smith, of Natal, has been on a visit to the Rand this week.

* * * *

Mr. W. A. Hope, one of the directors of Nobel's Explosives, Ltd., is on a business visit to the Rand.

* * * *

Mr. H. Newhouse left on Tuesday night for Capetown, on his way to England.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

Forthcoming Meetings of Technical Societies.

American Society Mechanical Engineers.—Chicago, Ill. May 23-26.

Forthcoming Company Meetings.

Barrett's Rietfontein Syndicate, Ltd.—Ordinary annual general meeting; March 30.

Delagoa Bay Lands Syndicate, Ltd.—18th ordinary general; March 30.

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

Rand Selection.—Twenty-ninth ordinary general; Corner House; May 17.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Knight Central.—Corner House; May 20.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Coal and By-products.

Recent Developments in the Microscopic Study of Coal.—*The Canadian Mining Journal*, Feb. 4, p. 86.

The Distribution of Mineral Matter in Coal.—*Iron and Coal Trades Review*, Feb. 25, p. 272.

Precautions Against Coal Dust.—*Iron and Coal Trades Review*, Feb. 25, p. 283.

Engineering.

The Magnetic Field.—*The Electrical Review*, Feb. 18, p. 199.

American 107-ton Coal Wagons (illustrated).—*The Engineer*, February 25th, page 217.

Standardising the Testing of Welds.—*The Engineer*, February 25th, page 200.

Electric Lifting Magnets.—*Iron and Coal Trades Review*, Feb. 25, p. 278.

Losses in Convergent Nozzles.—*Iron and Coal Trades Review*, Feb. 25, p. 283.

Metallurgy.

Methods at Rio Tinto.—*Mining and Scientific Press*, Feb. 5, p. 185.

Abstracts of Papers to be presented at A.I.M.E. Meetings, from *Mining and Metallurgy*, the journal of the American Institute of Mining and Metallurgical Engineers: Dust-ventilation Studies in Metal Mines; The Health of the Underground Worker; Manufacture of Ferromanganese in the Electric Furnace; Chemical Equilibrium between Iron, Carbon and Oxygen; The Electric Furnace in the Iron Foundry; Rate of Formation of Copper-sulphate Stalactites; Measurement of Blast-furnace Gas; Alaskan Coal Fields; Static and Dynamic Tension Tests on Nickel Steel; Skip Hoisting for Coal Mines; Coal-pillar Drawing Methods in Europe; Secondary Intrusive Origin of Gulf Coastal Plain Salt Domes; Principles Governing Mexican Taxation of Petroleum; Isostatic Adjustments on a Minor Scale in their Relation to Oil Domes; Carbon Ratios of Coals in West Virginian Oil Fields; Molybdenum Steels; Pillar Drawing in Thick Coal Seams.

Industrial.

Machinery for Glass Manufacture.—*The Engineer*, February 25th, page 204.

The British Chemical Industry.—*Iron and Coal Trades Review*, Feb. 25, p. 305.

The Stability of Contracts.—*Electrical Review*, Feb. 25, p. 259.

Iron and Steel.

Fuel Economy in Iron and Steel Works.—*Iron and Coal Trades Review*, Feb. 25, p. 279.

The Ferro-Alloy Market.—*Iron and Coal Trades Review*, Feb. 25, p. 299.

Miscellaneous.

The Guggenheims and the Smelting Industry.—*Mining and Scientific Press*, Feb. 5, p. 179.

Alkali Depoits of Western Canada.—*Canadian Mining Journal*, Feb. 4, 1921, p. 92.

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ENGINEERING SECTION.

The Standardization of Mining Materials.

(By B. W. Holman).

The Institution's proceedings are enriched by Mr. Wraight's careful and detailed collection of actual figures, so few of which are to be obtained from other publications.

With regard to metal mines, usually remote from sources of supply, and the ordering of materials to a given specification " one can call spirits from the vasty deep, but will they come."

In practice, the manufacturer is all too likely to send what he thinks best from his own general experience, and to ignore the specification, even if he agrees to it at all. This being so, specifications are useless unless the miner purchasing can check deliveries competently and accurately.

The average harassed mine assayer has no time to attend to such troublesome determinations as carbon, vanadium, chromium, phosphorus, etc., as well as attending to the usual rush of carefully standardised routine work. Moreover, the average gold assayer is not an iron and steelwork chemist any more than he is a foods and drugs analyst, and therefore could not do the work sufficiently accurately to really check deliveries. The question thus resolves itself into one of whether it would pay the mine to employ a chemist, or an additional assayer with a knowledge of chemical analysis, for such work.

If the mine is a large one and, besides iron and steel, the other materials employed about the mine are bought to a checked guarantee, it is very surprising what savings may be effected.

Rubber, for example, has been known to be supplied in thick sheets for placing under the mortar boxes in a mill, which, when analysed, contained over 60 per cent. of barium sulphate and other mineral matter, together with 20 per cent. of remade rubber—truly a good substitute by eye to pay for as rubber but one readily detected as rubbish by the chemist.

Lubricating oils often repay examination, particularly when they are labelled " for export only." Some such would not be bought twice by the same customer in England. Flash point, acidity, fatty oils and gumming are easily tested by a chemist. Flash point is important when the oil is to be used for air compressors.

Switch-box oils should also be tested for carbonization.

Greases of admittedly cheap quality are used for the axles of trucks underground and for the tappets of stamp batteries. Such greases might not repay examination if found cheap and serviceable in practice; but when grease is bought for some special purpose, *e.g.*, for sheaves or for dressing winding ropes, it should be examined for mineral oil, fat, graphite and grit content as well as for acidity.

A grease specially supplied for wire rope dressing has been known actually to contain 2 per cent. of quartz as such. It was probably introduced unknowingly by the makers as a constituent of the graphite (of which there was 9 per cent.) which they had added to the grease, *i.e.*, the grease maker had not tested *his* materials.

Cement which has had to travel 1,000 miles or so by sea, and has been knocked about in warehouses and on quays for weeks is sometimes found to have deteriorated surprisingly. The swelling and tensile tests are not difficult to carry out, but take some time to perform, the specific gravity can, on the other hand, be tested at once.

Lime, so much used in cyaniding, may vary very greatly in " available lime." Deterioration back to carbonate may have proceeded far, or the manufacture may have been imperfect, without either being detected by eye. Yet a simple titration detects either immediately.

Also there may be an excess of fine carbon in the lime, left from the fuel used in the process of manufacture. This is harmful to cyanide and invisible to the eye, but is easily detected by the chemist.

Cyanide of sodium varies greatly in strength also, but is usually bought on a guarantee which the mine assayer checks.

Chloride of lime used underground to sweeten the atmosphere, and also sometimes used in large quantities to destroy residual cyanide when sand filling is employed, varies amazingly in quality.

I have known a consignment with large red labels on which read: " Guaranteed strongest chloride of lime made " to contain only 3 per cent. of available chlorine, instead of the 30 per cent. asked for in the mine's specification. This was probably due to the material being packed in iron drums which had not air-tight lids. Time and the long sea journey through which they had been, also probably the hot climate, had caused the chlorine to go. The stuff could not have been so poor when it was manufactured. On this occasion two other makers submitted samples containing respectively 18·1 per cent. and 32·2 per cent. available chlorine, but they were in soldered drums, and without nice reassuring red labels. The last maker's material was purchased. If the mine had not used a chemist, but had bought the " guaranteed strongest made " consignment, they would have been paying over 10 times as much for their available chlorine.

Calcium carbide used to vary much in gas yield per lb., but now it is all made electrically most makes do not differ by more than 5 per cent. if properly packed.

Miscellaneous stores are also often worth testing. The amount of filler and the oil used in paints; the melting point and candle power hours in still air, and in air at a standard velocity, of candles; solder for tin content; fuse for deterioration of waterproofing; and explosives for force and condition are among the many materials used on a mine which may vary greatly in quality, under special conditions.

Carbolic powder is used in appreciable quantities on mines in hot climates where many natives are employed. The guaranteed content of 7 per cent. carbolic acid has been known to be as low as 1 per cent. by the time the powder reached the mine from England. This is due to the effect of heat and the mere paper over the holes in the tins.

Other materials will often repay testing by the chemist on a mine in his spare time. He can check the quality of the drinking water as regards albuminoid nitrogen, nitrates and chlorides. He can analyse the boiler scale formed if the mine has a steam plant. Chemical water softeners give great economies if accurately controlled; the chemist can check the boiler water daily for causticity, alkalinity and hardness, and adjust the water softener accordingly.

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*From Discussion before the Institution of Mining and Metallurgy of a paper by Mr. Wraight.

Where the mine feeds its own native labour, bread, cocoa, oils, and edible fats are sometimes found to be surprisingly adulterated. I know one case in which the bread supplied was found to contain about 33 per cent. of added starch. This starch was added in the form of a mash prepared from undersized potatoes purchasable by the baker at 10d. a cwt. A profitable substitute for flour which did not show on examination by eye of the new bread; of course it was easily detected by determination of the nitrogen content of the bread.

After complaint by the mine the baker supplied us with all flour bread for a few days until he discovered how the mine had found him out. Then he went back to his starch mixture, but with some local unsaleabl ebeans added to bring up the nitrogen content. Unfortunately for him the mine possessed a microscope.

Useful work can be done by a chemist on a mine in any additional time he may have left in checking the ash and moisture of the coal delivered to the mine, if steam is used, and particularly the moisture in coke if gas-producers are used. This latter moisture may run 10 per cent. easily. He can also profitably check the composition of the flue gases from the boiler plant if there is one. Sometimes a wasteful excess of air is used owing to the home-trained foreman stoker not allowing sufficiently for the peculiarities of the local coal.

Chemical reagents supplied to the mine abroad for such analytical work, if not themselves tested, may give unreliable results, *e.g.*, ammonium molybdate used for phosphorus determination is one which needs watching.

Iron and steel analysis alone does not show the heat treatment or the mechanical condition of the metal.

Testing machines for tensile and other tests are too expensive for the ordinary mine, but if standardization were adopted and its utility demonstrated, groups of mines would be able to set up testing laboratories and share their use.

Metallography is slightly different. The first cost of the apparatus required is not high, and no varied or expensive reagents are used. The work is easily learnt sufficiently well for the worker to recognise the structure due to a certain heat treatment, and to distinguish between the different grades of iron and steel goods used on a mine.

Analysis alone, for example, may not show the cause of failure of a nickel steel crank shaft. If the cause is improper heat treatment metallography will show it at once. Again "refined hammered malleable iron," as quoted on p. 11, may not be distinguishable by analysis from ordinary mild steel which might be substituted by the maker, although the former would naturally be charged for.

The latter actually occurred in a case I met with personally. The cam shafts supplied by a certain firm commenced breaking too frequently. Analysis showed merely rather lower silicon and slightly higher carbon than before, but within the limits to be expected from isolated samples. A micro-photograph was taken and at once showed the shafts to be of mild steel and not of faggoted wrought-iron as specified and paid for by the mine.

The makers when written to (the micro-photograph was not mentioned) stated that the cam shafts supplied were of faggoted wrought-iron as specified and sent a (correct) analysis in support of their statement and challenged the mine to prove that their analysis was wrong. The mine then sent a print of their micro-photograph to the maker with an accompanying letter. The maker then said their salesman had made a mistake about the consignment, but that they were of opinion that the mine was mistaken in specifying iron; they knew ordinary mild steel was better. Anyway, after that the mine got the article it paid for.

The Electric Shovel in Open-cut Mining.

(By C. R. Fisher, Electrical Engineer, Michigan Limestone and Chemical Company, and H. G. Head, General Electric Company, Detroit).

The electric shovel is a new development, the possibilities of which are being recognised more and more by quarrying and mining companies. Heretofore the use of steam as the motive force for mechanically operated shovels has seldom been questioned, but the present high prices of coal, shortage of labour, and general need of economical and increased production are causing progressive companies to scrutinize their operating conditions very closely and to seek every method which will increase the efficiencies of their operating systems.

The development of the large electric shovel has been made possible largely through application in the middle west coal fields and in the iron ranges of Minnesota. Up to a few years ago the 100-ton steam shovel was the largest excavator in general use, but material handling has been greatly improved by the adoption of large electrics.

In coal mining, the usual procedure was for the surveyors to go over all prospective coal mines and buy up mining rights from the owners. Wherever the coal had an overburden of 25 to 30 feet or more the option was bought, but when the overburden was 10 to 15 feet, the prospect was considered uncommercial because of insufficient material above the coal vein for safe shaft mining. This meant that there was a large amount of very good coal too close to the surface to be mined. However, with the advent of the large coal strippers, all of this coal land was reclaimed and it is now the most remunerative form of coal mining. The art has developed so rapidly that burdens up to 100 feet in thickness have been removed from coal seams 4 to 5 feet thick. In such cases, the large 300-ton shovel is commonly used, followed by a small friction electric shovel which loads the coal into small dump cars.

The success of these large shovels in stripping has led to their development in other fields, such as excavating and loading ore directly into the dump cars. The success of large shovels for this work is due largely to the great difference in the amount of material available in front of the large shovel without moving ahead. A smaller shovel, say the 100-ton size, would have to move ahead about twenty times to handle the same amount of material. This would necessitate lengthening the loading track eight times, whereas the large shovel would load the same amount of material from one position. Figuring in these delays of the 100-ton shovel, the 300-ton shovel should dig approximately twice as much yardage as the 100-ton shovel per shift.

This article was written primarily to discuss the construction and performance of the model 300 E Marion electric shovel with General Electric automatic control, recently installed in the Michigan Limestone and Chemical Company quarry. In general the shovel is of large capacity type fitted with an 80-foot boom to give a digging radius of approximately 54 feet at the rail and 90 feet at 40 feet above the rail. The present dipper has a capacity of six cubic yards. Ultimately an eight-yard dipper will probably be substituted. All of the electric equipment except the crowd motor installed on the boom is located in the cab, which is approximately 50 feet long, 22 feet wide, and 15 feet high. The cab and boom revolves as a turn-table on a large square platform made up of steel beams and plates and mounted on four trucks for locomotion on eight 130-pound rails.

The electrical machinery portion of the equipment consists of one four-unit motor-generator set with direct-connected exciter, two hoist motors geared to a common shaft, one swing motor, one crowd motor and one trip motor. The ratings of the units of the generator set are:

Synchronous motor ATI, 6 poles, 435 kv-a., 1,200 r.p.m., 2,300 volts, 3 phase, 60 cycle.

Hoist generator MPC, 6 poles, 250 kw., 330 volts no load, 250 volts full load, differential compound wound.

Direct connected exciter EC-5, 4 poles, 20 kw., 125 volts, flat compound wound.

Swing generator and crowd generator each MPC, 4 poles, 50 kw., 330 volts no load, 250 volts full load, direct current, differential compound wound.

The ratings of the direct-current motors are:

Two hoist motors each MDS 109, 6 poles, 175/140 h.p., 400/450 r.p.m., 230 volts.

Swing motor MDS 106, 4 poles, 75/55 h.p., 485/550 r.p.m., 230 volts.

Crowd motor MD-106, 4 poles, 70/25 h.p., 500/900 r.p.m., 230 volts.

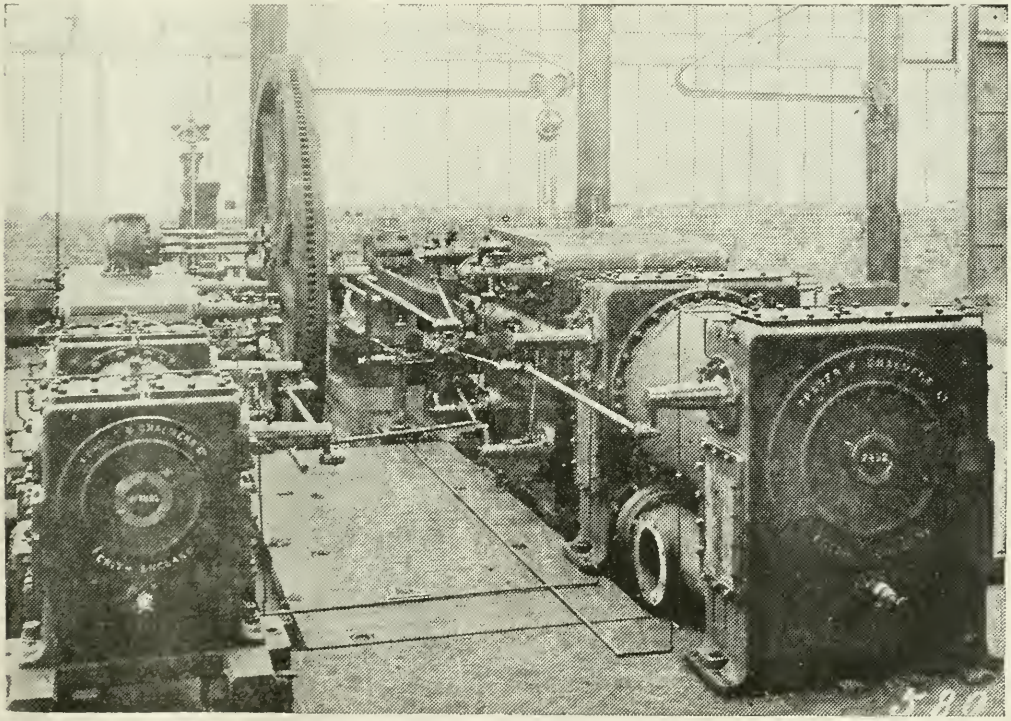
The hoist, swing and crowd motors are series wound. They are doubly rated, the larger horse power value being the intermittent rating at the lower speed, the smaller horse power value the continuous rating at the higher speed. The trip motor is rated KTE, 8 pole, 50 lb. torque, 900 r.p.m., 220 volt, 3 phase, 60 cycle. This motor is of the high resistance squirrel cage rotor type.

The two hoist motors are connected in parallel and supplied with power by the hoist generator. By a system of gears the hoist motors are used for hoisting the dipper by means of cable and drum, for propelling the entire shovel outfit on its track to new digging positions, or for raising or lowering the boom. The swing motor is supplied with power by the swing generator and is used for revolving the cab and boom on the turn-table. The crowd motor is supplied with power by the crowd generator. This motor operates the dipper stick through a system of reduction gears, pinions and racks. The trip motor operates the trip mechanism on the bottom of the dipper by means of cable and drum.

It should be noted that the control of this new electric shovel is radically different from that of the old type which consisted of series motors all operated from one constant potential generator, speed variation being taken care of by a resistance in series with the armature of these series motors, which resistance was short circuited in steps by contactors to produce acceleration. These motors were protected by stalling relays and resistances which automatically kept the current down to a proper value whenever the motor was stalled. It is evident that this type of control meant a heavy energy loss and lack of smooth operation. On the new equipment, the crowd, swing, and hoist motors are each supplied with power from generators of their own and the speed control is entirely through variation of a resistance in the shunt field of each generator similar to the Ward Leonard control on battleship turrets and high duty mine hoists. Due to the inherent protection features of the control, no protection of any kind is necessary as the differential series field of each generator bucks the generator voltage to nearly zero when the motors are stalled at maximum torque. The operation with the new equipment is much smoother than with the old type and does away with the sudden stresses in the hoist cable. These stresses are very objectionable as they shorten the life of the hoist cable very materially.—*General Electric Review.*

Big Orders Secured by Hudson's.

Messrs. Robert Hudson, Ltd., the well-known light railway engineers of Leeds, England, have received the following orders: 55 kilometres of light railway, and 7 locomotives for the Siamese State Railways. 50 kilometres of light railway for the Crown Agents for the Colonies for use in Uganda. 40 kilometres of main line railway track for the C.F. Lourenço Marques. Also very many other orders for light railway track and rolling stock from all parts of the world.



In a Rand Mine Engine Room.

Electric Power Supply in the Union.

IMPORTANT REPORT BY MESSRS. MERZ & McLELLAN—CONCLUSIONS AND RECOMMENDATIONS.

The following are the conclusions of the very valuable report by Messrs. Merz & McLellan on electric power supply in the Union:—

(1) The coal and iron deposits of South Africa, besides other natural resources and advantages, point to a great future for the industries of the country and, in order that development may proceed rapidly, the adoption of a definite policy as regards electric power supply is second only in importance to the provision of proper transport facilities.

(2) If such a policy be adopted to-day, before further industrial development takes place, South Africa will have an advantage compared with other countries where, due to lack of a definite policy on the one hand, and the growth of vested interests on the other, power production and distribution have developed piecemeal and at unnecessarily high cost.

(3) An Act should be passed by Parliament providing for the regulation and unification of the supply of electricity and other forms of power throughout the Union.

(4) This Act should govern the development of electricity supply, the fixing of standard frequencies and pressures, and make regulations for gradually bringing about uniformity.

(5) The Act should control the extension of existing undertakings, and the establishment of new ones, and generally settle the terms of future concessions.

(6) The Act should further deal with such questions as limitation of prices charged by electricity undertakings, the raising of capital, and the compiling of statistics and the rendering of annual returns on a uniform basis.

(7) The Act should include clauses relating to the utilisation of water powers, breaking up of streets, consents of local authorities, acquisition of land, water rights, wayleaves, and other provisions for facilitating the initiation and economical development of electric power supply undertakings.

(8) The Act should establish a small body of Electricity Commissioners, with an obligation to encourage new schemes for the development of electric power supply, and generally to administer the Act in accordance with the principles explained in the report.

Types of Locomotives for the S.A.R.

REVIEW OF THE PRINCIPAL CONSIDERATIONS THAT DETERMINE THEIR CHARACTERISTICS.

In the course of their now classic report Messrs. Merz and McLellan write:—

For dealing with main-line traffic, whether goods or passenger, on any electrical system, one or more types of electric locomotive are required, and in deciding upon the characteristics of each type, a number of important considerations must be taken into account.

The two principal considerations which go to determine the characteristics of any locomotives are

The draw-bar pull that must be exerted, and

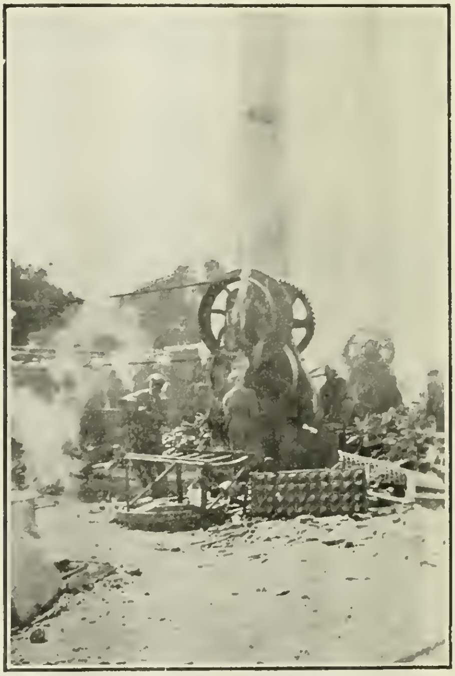
The maximum and average speeds of travel.

Both of these factors are to a certain extent under the control of the designer, but economic considerations have an important bearing on the matter. For any given power of locomotive it is possible to take a light load at a comparatively slow speed. In practice, owing to the presence of gradients, it is the general rule where goods traffic is concerned, to take as heavy a load as the locomotive is able to haul up the maximum or ruling gradient, provided the brake equipment of the train as a whole is capable of controlling the speed down the steepest gradient. In South Africa, where all vehicles are fitted with air brakes, the controlling factor is the draw-bar pull required to haul the train up the ruling gradient. With steam locomotives the load has to be limited to such a value that the draw-bar pull required is not beyond the maximum capacity of the locomotive as determined by the weight on the driving wheels available for adhesion. In the case of electric locomotives, however, which are not limited in the same way as steam engines as regards power or total weight available for adhesion, the limiting factor is to be found not in any characteristic of the locomotives themselves, but in the strength of the standard draw-gear of the rolling stock.

Strength of the Draw-Bar.

We have discussed this matter with the Chief Mechanical Engineer, and we understand that with the heavy type of draw-gear already in use on some of the goods wagons, and with which it is proposed ultimately to equip all the rolling stock, the strength of the draw-bar is sufficient to

THE ENGINEERING INDUSTRY ON THE RAND.



Scrap Shears at the Dunswart Iron and Steel Works.

enable a train of 1,800 short tons to be hauled up a gradient of 1 per cent. This corresponds to a pull of about 18,000 lbs. The heaviest locomotives at present in use on the South African Railways are able to exert continuously a tractive effort of 53,750 lbs. These engines, however, which are of the Mallet articulated type, cannot in practice travel at more than a very moderate speed, and for this reason their utility is somewhat limited.

The Tractive Effort.

We have carefully considered the question as to what draw-bar pull the standard electric goods locomotive should be designed for, and on the basis of the strength of the draw-gear mentioned above,and bearing in mind that with an electric locomotive there is less danger of couplings being broken due to snatching, we recommend that the weight available for adhesion should be about 120 long tons, and that the driving equipment should be designed to give a tractive effort (i.e., draw-bar pull plus tractive force required to propel the locomotive itself) of 48,000 lbs. for the usual test period of one hour, and of 64,000 lbs. for short periods such as during the start of a train. The latter figure in relation to the weight on the driving wheels, viz., about 120 tons, corresponds to an adhesion coefficient of 1 to 4·2, which is well within the limits of practice with electric locomotives. This recommendation has already been put before the Chief Mechanical Engineer, and we understand that it meets with his approval.

FEBRUARY COMPANY REGISTRATIONS.

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National Abrasives, Ltd., 21 Biccard Street, Braamfontein, Johannesburg; capital £2,000.
Gainsborough's, Ltd., Manners' Mansions, 166 Jeppe Street, Johannesburg; capital £5,000.
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The Commercial Estate and General Insurance Agency, Ltd., 214-220 St. Andries Street, Pretoria; capital £250.
B. D. Prospecting Syndicate, Ltd., 12 Sacke's Buildings, Joubert Street, Johannesburg; capital £11,500.
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Orkin's Buildings, Ltd., 136 Church Street, Pretoria; capital £12,500.
Bennett's, Ltd., 5a Jules St., Jeppes, Johannesburg; capital £1,000.
Murray Allen, Ltd., Behrman's Buildings, 80 Commissioner Street, Johannesburg; capital £1,000.
Vrede Produce Supply Company, Ltd., 131-137 Pritchard Street, Johannesburg; capital £250.
Transvaal Coal Corporation, Ltd., Second Floor, Corner House, Johannesburg; capital £250,000.
Alhambra Theatres, Ltd., 3 Corporation Buildings, Rissik Street, Johannesburg; capital £4,500.
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The Geological Society.

REVIEW OF A QUARTER OF A CENTURY'S WORK— MR. LESLIE'S ADDRESS.

At the twenty-fifth annual meeting of the Geological Society of South Africa, held the other day, Mr. T. N. Leslie, the retiring president, in moving the adoption of the report for 1920, said that there was some necessity for an increase in membership. The Council was loath to revert to the measure of increasing the subscription or making members pay for their copies of the Transactions, and they should make an effort to introduce new members to the Society.

The cost of upkeep of the new Scientific and Technical Club, in whose building they were meeting that night, fell upon the constituent societies, and as these have no funds to call on, the burden falls ultimately upon members. He therefore hoped that the appeal for funds would be well supported.

Geology of Forty Years Ago.

Proceeding to his presidential address, Mr. Leslie spoke of the early history of geology in this country. It was in 1882, he said, that he first undertook a geological excursion over the Transvaal. The first South African fossil plant that he saw was in Mr. Lucas's collection at Rustenburg. The great number of geologists and mining experts that came to the Rand when gold was first found in the banket formed the original Geological Society under the able direction of Mr. David Draper, to whom much honour was due.

"A Wonderful Combination."

Mr. Leslie then proceeded to deal with the different types of plants found in the coal measures of the Northern and Southern hemispheres. At Vereeniging flora typical of both systems were found in the glacial conglomerate. At this stage much mention was made of a fossil plant called "gangamopteris cyclopterides." It had been suggested, said Mr. Leslie, that the name should be abandoned, but geologists would be loath to give up such a wonderful combination. (Applause.) Speaking of the survival of fossil types, Mr. Leslie instanced Ginkgo Biloba, the maiden-hair tree, which, he said, was now a street tree in some parts of the world. Darwin had called it "a living fossil," and it was almost the same now as its ancestors in the coal measures. The tree had been preserved and cultivated in a certain Chinese temple from immemorial times, and later was brought to Europe since when it had taken a new lease of life.

An interesting point made by the speaker was that conditions on earth right back in the age of the coal forests must have been very similar to those obtaining at present. The modern representatives of the coal fossils could none of them live under marshy conditions, and the annular markings of fossil and petrified wood showed that similar seasonal changes of weather took place. This was at a time right back past Devonian times when the distribution of land and water was that of a different planet.

Concluding, Mr. Leslie said that if he had referred too much to botany and gardening it was because he could no more avoid such references than Mr. Dick could avoid mentioning King Charles's head.

Professor Shand, of Stellenbosch University, was elected the Society's president, and Mr. C. J. Gray, Professor J. G. Lawn and Mr. T. N. Leslie as vice-presidents. Dr. R. B. Young was re-elected hon. secretary and treasurer.

Transvaal Silver and Base Metals.

Dr. Heberlein, the metallurgical engineer, who has already been acting in a consulting capacity to the Transvaal Silver and Base Metals, Ltd., has arrived from London for the purpose of supervising the installation of the plant at present arriving on the property, and to give his advice on the design and lay-out of the further plant which will be required for extending the operations of the company.

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The Week in the Sharemarket.

EASTER HOLIDAYS INTERVENE—INVESTMENT STOCKS WELL SUPPORTED—DIAMONDS IN THE DOLDRUMS.

Writing on Wednesday, the market presents the usual holiday appearance and little business is doing. Investment stocks such as New Modders, Government Areas, Van Ryn Deeps, and the ever-popular Modder Deeps, are being well supported, but Modder B.'s are weaker. Modder Easts remain around 11s. 9d.

Diamonds are still in the doldrums and look as if they will continue to remain so. The oil market is seemingly being held over.

It may be added that at the moment of writing, Rouxville Diamonds have fallen. It is rumoured that a large number of boulders have been encountered on the property.

	Fri., Mar. 18th.	Sat., Mar. 19th.	Mon., Mar. 21st.	Tues., Mar. 22nd.	Wed., Mar. 23rd.
Anglo-Amer. Corp. ..	21 3*	20 9*	20 6	20 3	20 0
Apex Mines	—	—	6 6*	6 9*	6 9*
Bantjes Consolidated ..	4 1	4 0*	4 1*	4 3	4 3*
Brakpan Mines ..	51 0*	51 0	—	50 0	50 0
Breyten Collieries ..	4 6*	—	—	—	—
Brick & Potteries ..	—	—	—	4 6*	—
Bushveld Tins	0 6*	—	0 6*	0 6*	0 6*
Cinerella Cons.	2 6*	2 6*	—	2 6*	—
City & Suburbans ..	—	—	6 0*	6 0*	—
City Deeps	40 9*	40 6*	40 6	40 6*	40 6*
Clydesdale Collieries ..	—	26 6†	27 0	27 0†	—
Consolidated Diamonds	13 0*	13 0*	13 6*	13 3*	13 6*
Con. Investments ..	21 0*	—	25 0†	—	—
Con. Langlaagtes ..	11 9*	12 3†	13 0†	—	—
Con. Main Reefs ..	10 3*	10 3*	10 6*	10 3	10 1½
Coronation Freeholds ..	0 10*	—	—	0 9*	0 9*
Coronation Syndicates..	—	4 6†	5 0†	—	—
Crown Diamonds ..	3 2*	3 2*	3 0*	3 1*	3 3
Crown Mines	38 6*	38 6*	—	—	41 0*
Daggafontein Mines ..	3 3*	3 4½	3 4½	3 1*	3 4½
Do. Options.. ..	—	0 3*	—	—	—
East Rand Coals ..	2 0†	—	—	2 0*	2 0
East Rand Deeps ..	0 6	0 6*	0 9	—	0 6*
E.R. Minings	—	5 0*	—	—	—
East Rand Props. ..	—	4 9	4 6*	5 0†	5 0†
Eastern Golds	—	0 6*	0 6*	0 6*	0 6*
Frank Smith Diam. ..	2 9*	2 11*	3 0	3 6	3 6*
Geduld Props.	46 9*	47 0A	46 9	46 6*	46 9
Glencairns	2 0*	3 0*	—	—	2 0*
Glencoe Collieries ..	—	10 6*	10 6*	10 6*	10 6*
Glynn's Lydenburgs ..	10 0†	—	10 0†	10 0	9 6†
Government Areas ..	78 6	78 3	78 0*	78 6	78 0*
Hume Pipes	19 0*	20 0†	18 3*	—	20 6†
Jupiters	—	3 4*	3 4*	3 3*	3 6
Klerksdorp Props. ..	—	—	2 3*	—	—
Knight Centrals ..	3 4*	3 4*	3 6	3 4*	3 4*
Knights Deeps	13 9*	13 6	13 3*	13 0*	13 3*
Lace Props.	8 6†	8 3†	—	—	—
Leeuwpoort Tins ..	7 0*	6 9*	6 9*	6 9*	6 6*
Lydenburg Farms ..	5 3*	5 3*	5 6†	—	5 0
Meyer and Charlton ..	80 0*	—	85 0†	—	—
Middelvlei Est. ..	—	—	—	1 0*	1 0*
Modder B.'s	26 0*	25 9*	25 0	24 9	23 3
Modder Deep	40 9	40 9	41 0	41 0A	40 9
Modder Easts	12 0	12 7½	12 9	12 6*	12 0
Do. Options (4 yrs.)..	0 4*	0 6*	—	0 5*	0 5
Natal Navigation Col...	—	—	—	—	33 6†
National Banks.. ..	—	—	—	£11½†	£11½†
New Eland Diamonds..	16 0*	17 0*	16 0*	17 0*	17 0*
New Era Cons. ..	6 6*	6 6*	6 6*	6 9*	6 9*
New Geduld Deeps ..	1 3*	1 3*	1 3*	1 3*	—
New Heriots	8 0†	8 6	—	8 6*	8 6*
New Kleinfonteins ..	5 6*	5 6*	5 6	5 3*	5 3*
New Modderfonteins ..	64 9*	65 0	64 9*	65 0	64 9*
Nigels	—	—	4 0*	—	—
Nourse Mines	7 0*	7 0*	7 0*	7 0*	7 6*
Premier Deferreds ..	85 0*	—	—	—	—
Premier Preferreds ..	105 0*	120 0†	115 0†	115 0†	—
Pretoria Cements ..	53 6A	54 0	54 0	53 3*	52 6*
Princess Estates ..	0 8*	0 8*	0 8*	0 8*	0 8*
Rand Collieries ..	1 0†	1 6†	1 6†	1 6†	1 0*
Rand Nucleus	0 10	—	0 10*	0 10*	0 10*
Randfontein Est. ..	12 0*	12 3*	12 3*	12 3*	12 3*
Roberts Victors ..	4 9*	—	5 0*	5 0*	5 0*
Rooibergs	3 0*	3 0*	3 0*	3 0*	3 0*
Roodepoort Uniteds ..	0 9†	—	1 0†	0 9†	1 0†
Ryan Nigels	4 0*	—	—	—	4 0
S.A. Breweries	—	27 0*	—	—	—
S.A. Lands	4 0*	4 1	4 1*	4 2	4 2*
Springs Mines	31 0A	32 0	31 6*	31 0*	31 6
Sub-Nigels	11 3*	11 0*	11 3	11 3*	11 6*
Swaziland Tins ..	5 0*	—	5 0*	5 0*	5 0*
Trans. Con. Lands ..	18 0*	18 0*	18 0*	—	18 3*
Trans. G.M. Est. ..	9 6*	10 3†	10 0†	10 0†	—
Van Ryn Deeps ..	67 0B	68 0A	66 6A	66 0	67 0*
Village Deeps	6 0*	7 0†	6 0*	6 0*	6 0*
West Rand Cons. ..	—	—	2 6†	2 6†	Æ
Weste'n Rand Estates	2 9*	3 0†	3 0†	2 9*	—
Witbank Collieries ..	42 6*	42 6*	41 0*	42 6*	42 6*
Witwatersrands ..	11 0*	—	—	—	—
Wit. Deeps	7 6*	—	—	6 9*	6 9*
Wolhuters	3 10*	4 0	4 0	4 1*	4 1*
Zaaiplaats Tins ..	2 7*	2 9	2 6*	2 9*	2 9*
Union 5 per cent. ..	£97	£96½	£97	£96½	£97
New State Areas ..	22 0*	23 0†	22 0A	22 3*	21 9*
Randfontein Centrals ..	—	—	—	—	9 6†
Rouxvilles	7 0	7 0	6 6	5 9	3 6
S. Van Ryns	5 6†	—	5 0†	5 0†	4 6*
S.A. Townships ..	9 3*	9 6	—	9 9†	9 0*
S.A. Alkali	20 6	20 6	19 0*	17 3	18 0*
Do. Options.. ..	5 0†	3 9*	3 0	3 0*	3 0*
Transvaal Silver ..	24 6*	26 0	25 9*	26 6*	26 9
Trans. Delagoa Invest.	50 0*	50 0*	50 0*	—	50 0*
Union Corporation ..	16 6*	16 6*	16 6*	—	16 6*
Van Dyks	1 3	1 3*	1 3*	1 3*	1 3*
West Springs	14 9	14 3*	14 6	14 4*	14 0
Do. Options.. ..	0 9*	0 6*	—	0 6*	0 6*

*Buyers. †Sellers. A ex London. B Odd lots.

We have to acknowledge receipt of the "Practical Electrician's Pocket Book" for 1921, which is edited by H. T. Crewe, M.I.Mech.E., and published by Messrs. S. Rentell & Co., Ltd., 36 Maiden Lane, Strand, London, W.C.2. This publication, which runs to over 500 pages, should prove invaluable to electrical engineers, electricians, etc. The work is published at 3s. net, and is obtainable at all booksellers.

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RHODESIAN SECTION.

The Big Strike Over at Last.

WORK RESUMED ON TUESDAY—THE EMPLOYERS WIN.

Work was resumed on the Rhodesian mines on March 22nd, an agreement having been signed by the Mine Owners' Association, the A.E.U. and the Rhodesia Mine and General Workers' Association. The first item in the agreement affirms the pledge signed a week ago that the unions will recognise the right of the mine owners to employ whom they please Other items provide for no victimisation, and that the position as to coloured labour is to be as before. Provision is made for dealing with differences in future, the final clause reading: "Conferences between the Mine Owners' Association and the Joint Executives of the responsible Unions shall be held after adequate notice at the request of either the Executive of the Mine Owners' Association or the Executives of the responsible Unions, so long as it is mutually agreed upon that the object for consideration is of sufficient importance and one open for discussion; and further that all minor differences should be settled between the mine management and the local branch of the Unions concerned, and further on the Mine Owners' Association undertaking to consider favourably the creation of local Boards to deal with the minor differences."

Southern and Northern Rhodesia.

His Honour the Administrator is passing through Bulawayo on his way to Livingstone to take over office as Administrator of that territory as well as our own, remarks the "Bulawayo Chronicle." Southern Rhodesia cannot but feel greatly interested in this step, though it does not affect us in any way that can now be seen. For this is an amalgamation of the Administratorships, and not of Administrations, the object being economy. Clearly the civil service of Northern Rhodesia has nothing to lose from the change, and there appears no more objection to one Administrator for the two territories than that they should be under a single High Commissioner, who is at the same time Governor-General of the Union. If sound reasons were discernable against what has been done they would concern Southern Rhodesians as much as our friends in the North. A doubt that might reasonably have arisen is as to whether Sir Drummond Chaplin, who has so much to occupy him already, felt that he had the time for this greater territorial obligation. Evidently, he is quite satisfied as to this, or he would not have undertaken the extra work and responsibility. Certainly it will give him rather more travelling than has already fallen to the lot of our Administrator.

THE LEADERS OF THE RHODESIAN MINING INDUSTRY, WHO HAVE RECENTLY DEFEATED AN ATTEMPT BY LABOUR EXTREMISTS TO DOMINATE THE MINES. A GROUP PHOTOGRAPH TAKEN AT THE MINING CONFERENCE IN SALISBURY.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—LOW GRADE MINES AND LOCAL INDUSTRIES—LABOUR LEADERS' RESPONSIBILITIES—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—WAGE REDUCTIONS—THE UNION'S PUBLIC DEBT—AFRICAN OIL CORPORATION—UNION'S EXHIBITS AT AMSTERDAM—COAL TRADE—SHIPPING CRISIS.

General Position.

The tendency is undoubtedly easier, and indications point to business generally becoming even quieter for the next two or three months: we do not yet seem to have come to the end of our troubles; everybody more or less is complaining of the shortage of money, and no decided revival of business conditions is expected before the turn of the half-year. Prices in the meantime are sagging, the tendency in many lines being downward; especially is this the case in steel plates and all heavy lines, which are gradually easing off in price. Timber, in the present inactivity in building operations, has also a downward tendency, and is in fact being sold to-day much below replacement values. The Agricultural Show, opened this week, will, of course, make for good, if not for the mining industry at any rate for retailers, as the influx of country visitors is bound to put in circulation a lot of much-needed hard cash.

In commercial circles the Railway Budget, introduced this week by Mr. Jagger, showing a deficit of £591,000 on the year's working, has been a keen disappointment, as under the circumstances it is, of course, impossible for the Government to entertain any large railway extension scheme, which naturally everybody was hoping for.

The ratification of the Anglo-Russian trade agreement has been favourably received by merchants, who look upon it as one step more towards stabilising European trade conditions.

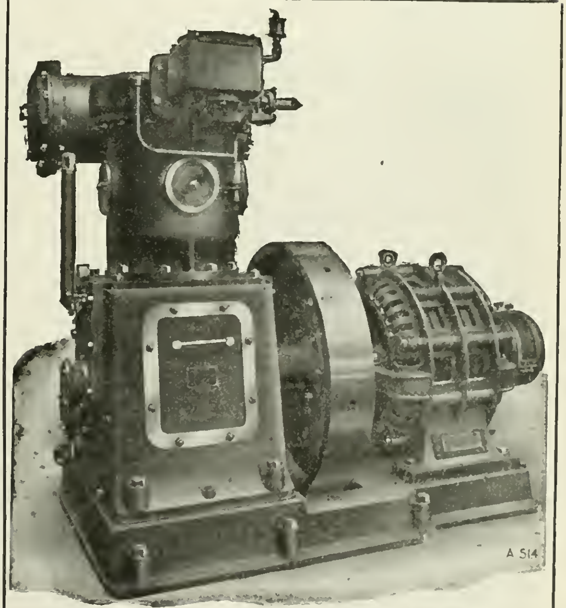
Low Grade Mines and Local Industries: Responsibilities of Labour Leaders.

Sir Lionel Phillips, Bart., in seconding the report at the annual meeting of the Chamber of Mines this week, gave a solemn warning to labour leaders to avoid all possible causes for frivolous strikes and labour unrest in the present critical position of the gold mining industry. The closing down of mines, with their consequent cessation of monthly cash distributions, affected not only Johannesburg but the whole of the Union. Sir Lionel thought that if everyone engaged in the industry gave of his best we should see a great change in the cost at which gold was produced.

Senator Kerr, at a meeting of the Pretoria Chamber of Commerce during the week, also animadverted on "the growing irresponsible section of the so-called Labour community." He said that the continued agitation for better conditions—which might be interpreted generally as "less work and more pay"—was greatly hampering the progress of trade and industry in this country. But signs, he said, that that section of the population were prepared to give a fair and reasonable measure of productive capacity in return for fair and reasonable treatment, were wanting. He emphasised the importance of responsible Labour leaders realising the present position of affairs and ceasing from hampering development of the Union's industries by irresponsible demands on the part of workers.

Iron and Steel.

Business has been inactive during the week and prices on the whole have a downward tendency, steel plates and heavy stocks especially so. Indications are that yet lower levels may be reached before any decided revival may be expected. The following are the ruling quotations: Imported iron and steel, flats, small sizes 40s. to 50s., larger sizes 38s. 6d. to 40s.; big sizes, flats, 49s. 6d. to 55s., iron and steel; ¼in. rounds, iron and steel, 69s. 6d.; 5 16in., 62s. 6d.; ⅜in., iron, 38s. 6d.; steel, 41s.; 7 16in., 44s.; ½in. and ⅝in. rounds, iron, 37s. 6d.; mild steel, 43s.; ¾in., iron and steel, 42s. 6d.; ⅞in. to 2in., iron, rounds, 39s. 6d.; larger sizes in iron, 52s. 6d.; 1in. to 3in. mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅝in., 41s. 6d.; 1¼in. to 3 in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d to 47s. 6d.; shafting, 3 16in., 1s. 2d.; ⅜in., 1s. 1½d.; 7 16in., 1s. 1d.; ⅝in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d. to 8¾d.; larger sizes, 7½d. to 8d.; spring steel, flats, 8½d. to 9d. per lb.; mild steel plates, 1 16. 19s.;



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⅜in., 48s. 6d.; 3/16in., 46s. to 47s. 6d.; ¼in., 44s. to 46s.; 5/16in., 42s. 6d.; ½in., ⅝in., ⅜in., ¾in., ⅞in. and 1in., 44s. to 46s.; bolts and nuts, hexagon, tapped, ½in., 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d. per 100lb.; ⅝in., 66s.; ¾in., 64s.; nuts, hexagon, tapped, ½in. and ¾in., 87s. 6d.; fish plates, bolts and nuts, ½in., 1s. 4d. per lb.; ½in., 9½d. per lb.; ⅝in., 72s. 6d.; ¾in., 68s. 6d. per 100lb.; dog spikes, 43s. per 100lb.; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d.; ½in., 64s.; ⅝in., 60s.; ¾in., 58s. 6d. per 100lb.; ⅞in., 10d.; tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜in., round, 1s. 10d.; ½in., 1s. 8d.; ⅝in. and upwards, 1s. 6d. per lb.; ½in., 1s. 9d.; ⅝in. and upwards, 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 9d. to 3s.; copper sheets, 2s. 7d.; brass sheets, 2s. 6d. per lb.; lead, £40 a ton; zinc, 5d. per lb.; tin, 3s. 3d.; copper, 10½d.; drill steel, 7½d.; hollow, 1s. 1½d.; wire nails, 50s. to 65s.; shovels, 65s. to 85s.; wheelbarrows, 67s. 6d. to 72s. 6d.; picks, 4lb., 45s.; 5lb., 55s.; 6lb., 70s.; 7lb., 75s.; pick handles, 35s.; barbed wire, 33s. 6d. to 50s.; wire fencing, 30s. to 50s., according to mesh; screening, 3s. to 10s. per sq. yard, according to quality; Dunswart, 33s.; Union Steel Corporation, small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d. For piping and fittings the demand has fallen off somewhat. Quotations for 1in. are: Galvanised iron, new, 1s. 4d. a foot; 1½in., black, new, 2s. a foot; second-hand, 1½in. and 2in., 1s. 6d. a foot; 3in., 3s.; 4in., 3s. 6d.; 5in., 4s.; 6in., s7.; 9in., 8s. 6d.; 10in., 10s.; 12in., 11s. 6d. a foot. Baling wire from 30s. per coil, 16 gauge. According to the latest cable advices the iron and steel industry is still very inactive, the recent substantial cuts in prices having so far failed to bring in much fresh business. Several more mills have closed down and the bar iron section is seriously affected by the continued strike in the nut and bolt works. Belgium's activities are increasing in the competitive export of steel bars, billets, sheet bars and nut and bolt iron.

Railway Wheels.

Krupps, it is reported, have secured a contract to supply the Argentine Republic State Railways with 10,000 steel wheels at the price of 49 pesos each, as against British and American quotations of from 70 to 118 pesos per wheel. Substantial reductions in the prices of bicycles and motor cycles are reported from London.

Engineering Shops.

There has recently been a slight improvement to record in the number of orders received in the engineering shops. In a conversation with one of the largest local firms it was elicited that there is quite a lot of work to be done here, but unfortunately there is still a prejudice existing against South African productions, although it is stated they are quite as good as the imported article, and considerably cheaper. The mines, of course, do not mind whence the goods come, as long as the price and workmanship are satisfactory, and upon the mines in great part the engineering shops depend for the greater portion of their work. The mines are, our informant stated, nearly the only people who give the locally-manufactured article fair treatment; local products were, he stated, in some cases being sold by merchants here as Home material. The great trouble is, he said, that the Johannesburg population does not represent the industries. The average Johannesburg importer has half a dozen, ten or twenty agencies from oversea, and will, he stated, time and again sell at a loss rather than allow small local industries to grow up and probably cause them trouble in, say, ten years' time. The Public Works Department, Railways, and mines look at both sides of the story, and receive and discuss tenders for work, but wholesale hardware merchants will not grant the same facilities. South Africa, he maintained, would be a contented and prosperous country if it consumed its own products. As an example of the difference in price between the locally-made and imported article he showed a gun-metal inspection bend which is manufactured here at 3s. 9d. as against the Home quotation of 5s. 6d., the workmanship of which he guaranteed to be equal to the imported. He stated, further, that the fire extinguishing appliances in buildings here since 1916 had nearly all been manufactured locally. Engineering work of all descriptions, he said, in conclusion, can be produced locally equal to the imported article, and at a considerably lower cost. All that the engineering firms here wanted was fair treatment.

Timber and Building Materials.

A leading timber importer "nutshelled" the position at the moment as "Things are very unsettled, and the market is jumpy." A certain amount of building is going on—the University, Chamber of Mines' new offices, etc.—but not too much activity is at present evident, in consequence of which trading is decidedly quiet. Timber has for some time past been sold round about cost—in some cases below cost—and incoming stocks will range appreciably higher. Deals, 3 x 9, are from 1s. 6d. to 1s. 9d.; scantlings, 1s. 5d. to 1s. 7d.; floorings, 10d.; ceilings, 7d.; beaver board, 5¼d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d. a cube; corrugated iron, 24 gauge, 10½d. to 11½d. In furniture timber a slightly easier tendency has been noticed during the week. Japanese oak is 1s. 11d. per square foot; Burmah teak, 24s. 6d.; American oak, 1s. 9d. to 1s. 10d.; 1-inch boards, 25s. per cubic foot; American black walnut, 1s. 10d.; West African mahogany, 2s. 2d. to 2s. 4d. per square foot, according to quality.

The second-hand timber and iron yards report fair business, with an improving tendency. Stocks are coming in now a little more freely. Timber is about 1s. 4d.; iron, 8d.

With the present inactivity in the building trade, bricks, pressed and wire cuts, range from 57s. 6d. to 72s. 6d. per thousand, and are weak. Firm orders will secure even lower quotations. Damp course and roofing remain unaltered at 40s. for 1-ply, 52s. 6d. for 2-ply, 65s. for 3-ply. Cement, 11s. 6d.; white lime, 7s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d. per bag.

In connection with the building of Municipal houses in the Union, the "Evening Standard" compares the erection of 200 houses in Bloemfontein with 30 only in Glasgow last year.

Electrical Goods.

Business is brisk in this section, satisfactory orders coming in from all parts of the country. Stocks are good in most lines, and fresh consignments are arriving regularly. There has been no change in prices, with the exception of tubing, which is cheaper and has a downward tendency owing to recent declines oversea.

Wage Reductions.

It is becoming evident in Britain that unless production costs can be considerably reduced more factories will have to close. Some reductions have already taken place, but in many directions labour has threatened to resist wage reductions to the utmost. The approaching decontrol of the coal industry will very seriously affect many coal-owners, and with the present drop in the demand for coal abroad, together with a corresponding slump in price. It is reported that it is absolutely impossible to pay the present rate of miners' wages. The miner will undoubtedly have to accept a lower scale eventually, despite present protests.

The Shipbuilding and Engineering Employers' Federation threatens to close the works at the end of April unless the men accept a reduction in wages. The employers' proposals, it is asserted, mean a reduction in wages of from 35 to 60 per cent.

The Railwaymen's Union has decided to put a levy on members of 6d. per week to provide funds for the resistance which will be offered to any attempt to reduce wages. The annual railway wage bill has increased from 47 millions in 1913 to 173 millions sterling.

Seamen's Wages.

Liverpool shipowners have submitted to the National Maritime Board a definite scheme for the reduction of wages and the revision of the working conditions of all ratings. The proposed reductions in wages range from £4 10s. per month for officers, seamen and firemen to £5 10s in the case of stewards.

The Union's Public Debt.

The report of the Public Debt Commissioners for the year ended 31st March, 1920, gives some interesting figures regarding the financial position of the Union. The Public Debt of the Union on May 30, 1910, amounted to £116,500,000, which, however, in ten years—viz., on 31st March, 1920—had increased to £173,900,000. In 1910 the Internal Debt (loans raised within the Union) amounted to £9,600,000, or 8·24 per cent. of the total debt. In 1920 the Internal Debt had risen to £50,500,000, or 29·05 per cent. of the total debt, meaning that South Africans during those ten years had invested more money in South African Government securities. In 1920 the gross Public Debt of the Union averaged £115 odd per head of the white population and £23 odd per head of the total population. The average annual debt charge per head of the European population was about £4 10s., and of the total population a little under £1; but, after deducting interests received from harbours and railway loans, Post Office capital, etc., the average annual debt charge works out at about £1 10s. per head of the white population and 6s. 8d. per head of the total population. Since 1910 the average debt per head of the white population has increased by about £22 10s., and that of the total population by £4. In comparison with the United Kingdom and France, Germany, the United States, etc., and, indeed, with Australia, the Union indebtedness per head of the population is small; and it is of interest to note that while the average rate of interest on the Commonwealth's Public Debt in 1919 was £4 12s. 2d., the average rate on the Union's debt is only about £3 15s.

Union's Exhibits at Amsterdam.

The Union's exhibits at the Amsterdam Fair have, it seems, surpassed all expectations. These consist of some 25 sections, and comprise the whole of the agricultural and industrial activities of South Africa, and include a complete model showing the surface workings of the New Modderfontein Gold Mine. In addition to this model, the Chamber of Mines have also contributed an exhibit representing the entire gold production of the world in comparison with the contribution made by the Transvaal mines since 1885. The greatest possible interest has been evinced in Holland and elsewhere as to our vast potential possibilities by this exhibition.

February Coal Output.

The coal output of the Union during February was 894,230 tons of a value of £426,961, as compared with 979,990 tons and £465,764 in January.

The Agricultural Show.

The very practical interest taken by mining men in agriculture was evidenced by the big gathering of Randites as well as farmers at the opening of the annual Show of the Witwatersrand Agricultural Society this week. Sir Drummond Chaplin, the Administrator of Rhodesia, who performed the opening function, is, of course, an old Rand mining man; and Sir Lionel Phillips has done perhaps more than anyone else to make our Show the great success it is to-day. For us the most interesting feature of the Show was the splendid exhibits of industrial products. The Show has indeed become in many respects an exhibition of the products of our local industries, and we purpose in next week's issue to have something more to say on this aspect of its usefulness.

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Letters to the Editor.

LAYING DUST UNDERGROUND.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I would like to suggest that in view of the following facts, that more advantage be taken of the condensation of moisture for laying dust underground. It is a known fact that when water vapour condenses to form clouds or mist, it does so round minute particles of *dust, this dust being necessary for the formation of drops.*

In a small pamphlet "Dust and Miners' Phthisis," published by the Chamber of Mines in 1916, the following appears on page 13:—

"The air ultimately becomes saturated, and under certain conditions, may re-precipitate moisture. This has been found to be the case in particular where saturated air from lower parts of the mine finds its way to higher and cooler workings. Apparently the *condensation of moisture* resulting from this has the effect of *settling the dust on the damp surfaces of the rock where it is retained,* and in some cases this action has been known to effect a *complete purification.* At present this phenomenon cannot be relied upon, but further knowledge may enable us to make use of it."

Owing to the extensive use of water underground, the air becomes charged with moisture, and I would suggest sending down by pipes to the stopes and development faces, which are shown by the konimeter to be the dust-producing places, air cooled considerably below the temperature of these workings, and thus cause condensation, with the object of laying the extremely fine and injurious particles of dust, and possibly also by means of this cooled air producing more invigorating conditions for the underground workers.

If this scheme proved successful in reducing phthisis the amount saved in compensation would reduce the cost of its installation

EXPERIMENTER.

NEW WEST RAND FLOTATION.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Before commencing this short letter, allow me to congratulate your free and independent journal on having reached its thirtieth milestone. From its inception its columns have always been open to my geological effusions, in which the West Rand has always come in for a fair share of attention, as she was practically my first love in this country, having been mill manager out there on the Bothas' in the interests of the late Cecil John Rhodes, with Mr. W. T. Hallimond as mine manager, in 1888. From that time on I have constantly stood by Krugersdorp and its surroundings, through your journal and the local newspapers, to save it from its friends by insisting that the reef series to which it owes its existence, beginning at Grey's Mynpacht and passing practically through the town of Krugersdorp on to Randfontein, etc., is not Main Reef series, but Black Reef series, which, in my continued opinion, is twice as valuable as the former, for the reason that it contains five payable reefs, and possibly more, whereas Main Reef series is confined for the present to two only, viz., Main Reef Leader and South Reef. As you are aware, Sir, I have the honour of being the best-hated geologist on the Rand, for the reason that I stand firm in denouncing the absurdity of the so-called "Witpootje Break," invented years back by certain members of the Geological Society for their purposes, and since stupidly followed by the gentlemen of the Geological Survey. To revert to my heading, "The New West Rand Flotation," with its moderate, though ample, capital, published in your last issue, it is to be hoped that it may be the forerunner of many more such on the Black Reef series out west, for why should the Far East Rand have it all its own way on exactly the same series of reefs, wasting millions of money when thousands would answer the same purpose on outcrop propositions between Krugersdorp and Klerksdorp, etc.

I maintain that this is a country for small mines as well as large, and the former would tend to greater independence and happiness for the community in general. Was it not so in the early days, and why not now? The "Golconda" on Grey's Mynpacht will better serve the interests of the Krugersdorp and Randfontein people by throwing in its lot with them, and cast aside the Main Reef series nomenclature to which it now pretends, as it has evidently discovered a new leader or two, which, when found on Randfontin Estate, will give it six or seven payable reefs, instead of five, and cause Main Reef devotees seriously to consider if they are backing the right horse.—I am, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg, March 23, 1921

Apex Mines, Ltd.

The Directors' Report, with the Statements of Account, for the year ended 31st December, 1920, states:—

Financial.—The net profit was £24,399, including an amount of £2,065 Sundry Revenue. The balance carried forward from the previous year was £34,060, giving a total of £58,459, which was dealt with as follows:—

Interim Dividends Nos. 28 and 29 of 5 per cent. and 7½ per cent., respectively	£18,750
Union Government Taxation	2,084
Appropriated for extension of Plant ...	3,496
Balance Unappropriated	34,129
	£58,459

General.—The Report of the Manager, which is attached, covers the operations at the Colliery for the year. The output was 205,135 tons, an increase of 15,824 tons, as compared with the year 1919.

Directors.—In accordance with the Company's Articles of Association, Capt. J. P. Farrar, D.S.O., and Mr. G. C. Fitzpatrick, O.B.E., retire from office. They are eligible and offer themselves for re-election.

Auditors.—You are asked to fix the remuneration of the retiring Auditors, Messrs. F. W. Diamond & English and A. E. Page, and to appoint two Auditors for the ensuing year.

The Manager's Report states:—

Plant.—The Machinery and Plant has been maintained in good working order, and has run satisfactorily throughout the year. Extensive repairs are being carried out on the large locomotive as opportunity offers. One 25 drill Bellis and Morcom compressor was erected and is working very well. This now gives us a spare compressor, and should the demand warrant it, more cutters can be installed at any time. The foundation for the new 150 k.w. generating set is being put in, and early delivery of the set is expected. The multitubular boiler was removed from the old shaft and erected at the present shaft, and the boiler house was extended. One boiler feed pump was also installed.

Mine Development.—The mine development is very satisfactory, and figures are attached showing the actual tonnages despatched during the year. The area developed was 3,865 feet, representing an area of 17·38 acres, which should yield 282,728 tons of marketable coal.

Mechanical Haulage.—The haulages have been extended throughout the year as occasion required. A new set of haulage gear, with motor, is now in readiness awaiting the erection of the generator on order.

Air Shaft.—An air shaft has been sunk for ventilation purposes.

Coal Cutters.—These worked very well, and the greater part of the output was cut by them. Three new cutters were put in commission and the 4 in. air mains were well extended.

Buildings and Quarters.—All the buildings on the property have been maintained in a good state of repair.

General.—A large number of brick stoppings were built underground to isolate old workings, and the mine is now well equipped in every way. The result of the year's work shows an increase in output of 15,824 tons, and also an increase in profits. The total output for 1920, as compared with the previous years was as follows:—

	1919	1920
Round Coal ..	50,145·5 tons	81,299·0 tons
Nut Coal . .	27,364·0 tons	18,690·5 tons
Crushed Coal .	70,264·5 tens	64,180·5 tons
Duff Coal .	39,221·5 tons	38,255·0 tons
Second Coal	2,615·5 tons	3,010·5 tons
	189,611·0 tons	205,435·5 tons

The Week's Meetings.

FERREIRA DEEP, LTD.

ADVANCE IN YIELD PER TON.

Future Dependent on Costs.

The annual general meeting of shareholders in the Ferreira Deep, Ltd., was held yesterday in the Board Room, Corner House. In moving the adoption of the report, balance-sheet and accounts for the year ended on September 30, 1920, the chairman, Mr. Frank Raleigh, said :

Gentlemen, You will, I know, regret that your late chairman, Mr. H. C. Boyd, is not presiding at this meeting. Mr. Boyd was chairman of this company for eleven years, and it is with much regret that his colleagues on the board have had to accept his resignation owing to his desire to settle in England. The report and accounts, which are now before you, deal with the operations of the company for the year ending September 30, 1920. Full particulars are given therein, and I need only refer to a few of the salient points, and give you information regarding the results obtained during the first five months of the current financial year. The appropriation account shows the company's net revenue to have amounted to £208,959, which is increased to £363,051 by adding the balance on hand at the commencement of the year. Out of this amount your board paid dividends of 22½ per cent., totalling £220,500, also Government and Provincial taxes, carrying forward to the current year £108,665, which is ample for future requirements. Shareholders will realise that they have received in dividends for the year a greater sum than the year's actual net earnings. There appeared to be no reason why the increased sum locked up in stores and materials during the war time, and which has since been released, should not be paid out to shareholders. The balance of the appropriation account is now at practically the same figure at which it stood at September 30, 1915.

Improvement in Net Profit.

The net profit obtained during the year under review showed an improvement of £31,768 on the previous year; the tonnage milled, a decline of 16,490 tons. The yield showed a falling off of .9dwt. per ton milled, which, as you will have seen by the profit earned, has been more than offset by the increased price of gold obtained above that ruling in the previous year. The consulting engineer reports that the improved yield per ton during the last quarter of the year will be maintained during the current year, and you will be pleased to know that recent results have justified this forecast. The re-estimate of the ore reserves shows a falling off of 56,606 tons and an increase of 0.3dwts. per ton in value. It will be noticed that the tonnage in the form of packs has been included in this year's reserve statement, but the tonnage and value given formerly did not make allowance for this ore. The payable tonnage developed for the year exceeded that of the previous year by 52,029 tons, and was of higher value. This increase of tonnage was chiefly due to development work accomplished in the area tributed from the adjoining Village Main Reef Gold Mining Company previously reported, where approximately 50,000 tons of main reef leader were developed.

Village Main Reef.

On account of the Village Main Reef having been placed in liquidation, the tributing agreement made with that company in August, 1918, has been superseded by the purchase of the area covered by the former agreement, together with certain additional claims, for the sum of £40,000. It is anticipated that a considerable tonnage will yet be developed in the area purchased, which I may say was inaccessible to the Village Main Reef Company, and that its acquisition will be remunerative to your company, and enable it to continue mining operations a little longer than it would otherwise have done. Included in the ore reserves are 318,882 tons not immediately available for stoping, comprising boundary pillars, shaft pillars, and isolated blocks, also 193,500 tons of broken ore in packs, which quantity, under the system of mining adopted, is regularly drawn upon and added to. The tonnage of block ore in reserve amounts to 480,792 tons, and with the exception of the area purchased from the Village Main Reef Company already referred to, there are no new areas in the mine yet to be developed which will materially add to this reserve. At the last annual meeting the chairman referred to the possibility of the main reef proving payable in the western section of the mine, and considerable quantities of ore are now being drawn from this source. Reference was also made to the pyritic footwall reef. This underlies the main reef leader in the easterly portion of the mine, and the consulting engineer reports that about 30,000 tons have been developed. For the most part this is situated in one locality, and subsequent prospecting work leads to the conclusion that the payable areas on this ore body are not very extensive.

Approaching an End.

The mine is now approaching its end, and for some years past the tonnage developed has not equalled the tonnage mined. It is difficult to determine how much longer the company may continue profitable operations, as this depends so largely on the price of gold and working costs factors. The margin of profit during last year, when calculating gold at standard price, only amounted to 1s 7d. per ton. Since the close of the financial year the working profits have averaged during five months ending on February 28 last, £15,087 per month. This includes last month's operations, when only £3,037 working profit was earned, chiefly consequent on a strike which occurred amongst the miners on the Central Rand, and which lasted for seven days. The average monthly working profit earned during the current financial year thus compares favourably with that of the previous year. As you are aware, however, the price of gold has fallen considerably during the last two months of the period referred to, and this year's average cannot be maintained with gold at its current price. Regarding the dividend for the current half year, your board has to-day decided to pay a dividend of 7½ per cent. to shareholders registered as at March 31. I desire to express the board's appreciation of the valuable services of the consulting engineer, Mr. E. H. Clifford, the manager, Mr. Paul Selby, and the staff generally.

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WOLHUTER GOLD MINES.

REVIEW OF YEAR'S WORK.

Mr. A. F. Mullins presided at the annual meeting of the Wolhuter Gold Mines, Ltd., yesterday in the Corner House. In presenting the report of the working of the year, at this the twenty-third ordinary general meeting of shareholders, the Chairman said: Before dealing with various points that call for review, I want to pay a small tribute to my predecessor in the chair (Mr. H. C. Boyd). He held the position for three years and during that period his experience and ability was of great service to the company. I would like to express our regret at his departure and to wish him every success in his new work. The reports and accounts are before us. Dealing with the latter first. Taking gold at the standard price there was a reduction in the revenue per ton of 1s. 2d., and this was accompanied by an increase in the working costs of 1s. 4d. per ton. But for the price of gold above standard our profits would have been reduced almost to vanishing point. Fortunately, the higher value of gold brought us an additional £132,997. The net profit for the year was £134,315. To that must be added £63,994 carried forward from 1919, giving a total of £198,309. Two dividends of 6¼ per cent. each absorbed £107,500, taxes amounted to £19,058, and £19 was refunded for forfeited dividends, while the undermining rights annuity, less the amounts received from sales of plant and under the Bewaarplaats Act, absorbed £4,665, leaving £67,067 to be carried forward to the current year, a slight increase on the amount with which we began the year. It will be noted from the Balance sheet that we have made the last of the ten annual payments in respect of the undermining rights from the Government.

Ore Reserves.

The ore reserves stand at just over 660,000 tons, the average value remaining at 5.7; the value of the available ore, however, has dropped from 5.7 to 5.5 dwts. I might point out here that owing to a printer's error after the final proof was passed, the ore reserves mentioned in the consulting engineer's report as being temporarily available, namely, 54,165 tons, should have been labelled temporarily unavailable. All main development work in the mine is now completed and our efforts in this direction will be confined in future to the opening up of odd blocks of ground by subsidiary development. We cannot expect any considerable quantity of ore from such work, and the ore reserves must therefore steadily decline. I regret to say that further development on the south reef in the south-east corner of the mine has shown it to be lower in both value and percentage of payability than was indicated in the chairman's speech last year. Owing to a better labour supply the tonnage milled was about 21,000 tons higher.

The Lower Yield.

The yield for the year averaged 5.6 dwts. per ton as against 5.9 dwts. for the preceding year; during the four months that have elapsed since the end of the financial year the yield has averaged 5.1 dwts. This decline was anticipated by the consulting engineer in his report, since not only has the average value of the available ore reserve declined, but in addition the ore now being obtained from reclamation points is of lower value than formerly, the richest of such sources having been exhausted. Good profits were earned during November and December last, but a heavy decline in the price of gold during January had the serious effect of bringing our revenue within sight of the expenditure. During last month (February) operations were interrupted by a strike of miners, the month's work in consequence resulting in a loss. We are now running on a small margin of profit, and it is obvious that in a low grade mine like ours any adverse factor such as a further fall in the price of gold or increase in costs will imperil the profit earning capacity of the mine. I have been asked by a shareholder to state the probable life of the mine. That depends on so many factors that it would be folly to hazard a guess. I can only say that if conditions remain as they are at present there seems to be no reason why the mine should not continue to work another two years. Any unfavourable turn might render working unprofitable, and necessitate closing down; whereas a combination of advantages would lengthen its life considerably. The board will next month consider the dividend position. The actual amount will depend on the results for this month and April, but it is not unduly optimistic to say that an amount of 3¾ per cent can be paid, and if the current two months give good returns a payment of 5 per cent may be possible. Once again our cordial thanks are due to the consulting engineer and the manager, and to all those who have been instrumental in forwarding the work of the company.

The report was unanimously adopted.

and all the directors retiring, and no other nominations being received, they were declared re-elected. The names were Major C. S. Goldman, Sir Evelyn Wallers, Messrs. S. C. Black, E. J. Renaud, W. T. Graham, P. Dreyfus F. G. C. E. Robellaz, Capt J. P. Farrar and Sir Abe Bailey.

Latest London Prices.

London, 12.25 p.m., Wednesday, March 23.—Sellers: New Modders, 64s. 4½d.; Modder B., 25s.; Modder Deeps, 10s. 6d.; Van Ryn Deeps, 65s.; Sub Nigels, 12s. 4.25 p.m.—Buyers: Modder Easts, 12s. 6d.; Government Areas, 74s. 4½d.; Anglo-Americans 20s. 6d.

* * * *

Metal Prices.

London advices state that on the Metal Market during the week copper was firmer on continued bear covering, but home export business was in abeyance. It is difficult to anticipate any further improvement at present. The President of the Anaconda Copper Mining Company states that the cost of labour, freight and refining amounts to 12½ cents per pound, not counting various other expenses. Tin commenced firm, but fell sharply on bear pressure. After rallying it finished easy. It is reported that an agreement has been signed between the Straits Government and the Dutch Government not to sell the tin accumulated recently before the end of May, but the market does not place great importance on the agreement, because it is impossible to sell this tin at present. It is understood that the production of tin in Bolivia is only 20 per cent. of the normal production. Lead was favourably influenced by the unsatisfactory position of the mining industry in Mexico. There was a fair export demand, but any sustained rise is not yet expected in view of the existence of a substantial surplus. As regards spelter, consumers showed more interest, but later the demand slackened. The future depends on developments with regard to supplies from the Continent. The situation as regards iron and steel has not materially altered. The trade is undergoing the process of readjustment, and until the process is completed the present stagnation must continue. The chief event of the week was a drop of 60s. in the price of hard steel billets to £15. Medium dropped 50s., while lower qualities dropped from 14s. to 10s.

FOREIGN COMPANIES.

Ranchers Direct Supply Association, Ltd., c/o S. D. Joseph, 10 London House, Loveday Street, Johannesburg; capital £250,000.

The Mikado (South Africa), Ltd., c/o G. E. Myers, National Bank Buildings, Von Brandis Square, Johannesburg; capital £10,000.

Golconda Gold Mining Company, Ltd., c/o E. McWilliams, 44 and 45 Permanent Buildings, Harrison Street, Johannesburg; capital £55,000.

British Flotmann Drill Company, Ltd., c/o E. F. Jones, Room No. 11, First Floor, Oceana Buildings, Simmonds Street, Johannesburg; capital £50,000.

Vickers (South Africa), Ltd., c/o Dowson & Dobson, Ltd., corner of Simmonds and Anderson Streets, Johannesburg; capital £10,000.

Transvaal Coal & Oil Shale Corporation, Ltd., c/o J. S. Richardson; Stock Exchange Buildings, Johannesburg; capital £250,000.

French Rand, Ltd., c/o E. McWilliams, 44 and 45 Permanent Buildings, Harrison Street, Johannesburg; capital £100,000.

MODDERFONTEIN EAST, Ltd.

(Incorporated in the Transvaal.)

Head Office,
The Corner House,
Johannesburg.
24th March, 1921.

Circular to Shareholders.

Dear Sir or Madam,—Shareholders were informed at the Special General Meeting held on the 21st December last that the Board had concluded an agreement for the purchase of the Simmer Deep-Jupiter Joint Reduction Plant on advantageous terms, viz.: £110,000 payable in three instalments over a period of one year. At the same meeting, and also at the Annual Meeting, held on the 7th December, reference was made to the further funds required:—

(a) For dismantling, additions to, and re-erection of the Simmer Plant.
(b) For additional general equipment underground and on the surface to enable the Mine to produce the larger tonnage of ore required, and
(c) For extended development, so as to still further strengthen the ore reserve position.

As shareholders know, it was the Board's intention to proceed with the erection of the Reduction Works at the earliest possible moment, assuming, of course, that the necessary capital could be secured. As a means to that end the Directors sought from shareholders, and were granted, power to create and issue shares equal to the number that may not be taken up under the four-year option and such number as may not be absorbed by the Debenture conversion right; they were also given authority to issue 122.124 shares, being the number of shares not called up under the three-year option, and these latter, together with 61,582 shares in reserve, were recently issued at par, under guarantee of The Central Mining and Investment Corporation, Limited. That guarantee resulted in that Corporation taking up 170.082 shares. The present condition of the market makes it improbable that any of the existing option rights will be exercised, unless some very marked and unexpected change takes place.

Never in the previous history of the Witwatersrand have times been so unpropitious for raising large sums of money, and your Board has, therefore, after very thorough study of the situation, decided to revise its policy by deferring the erection of the new plant.

The cost of labour and materials is still practically at the peak level, and the estimate of the amount required over and above the Company's present resources to pay off the debentures on the 31st July next and to complete the whole capital expenditure programme, as above indicated, is about £1,100,000.

The advantage of proceeding now with the construction of the Reduction Works and all that is involved rests upon the higher profits derivable from crushing 40.000 or 50.000 tons a month with your own plant on the Mine, as against 25.000 tons with the Apex plant, now in use, and that advantage would be considerable. But, on the other hand, the raising of the total amount needed, if procurable at all during the present period of financial stress, would necessitate the offer of extremely attractive, and therefore, for the Company, very onerous terms.

In view of the state of the share market and the current price of the Company's shares, financing by that medium is, for the time being, impracticable.

Long term loans are almost unobtainable, and the Board therefore deems it wise to tide over the existing critical period by a temporary loan. The Central Mining and Investment Corporation, Limited, has consented to grant a loan of £400,000 at 8 per cent. per annum from 30th June next, repayable on the 31st December, 1922, and secured by first mortgage on the property and assets of the Company. They stipulated for the right to convert the loan into shares at par during that period, and the Board have accepted the loan on condition that The Central Mining and Investment Corporation, Limited, are to afford shareholders the opportunity of participating. The lenders have agreed to allot, pro rata to applications, up to three-fourths of the loan, with option rights.

The Company's cash resources amount to about £230,000 to-day, and the procedure outlined above will permit the liquidation of the debentures at due date, and should also provide adequate funds for the continuation of an extended programme of development on the Mine, while crushing operations at the Apex plant will continue on the present scale.

During the period in question, a considerably greater knowledge of the Mine will be made available, and assuming fair values attend the development—very necessary in view of the magnitude of the financial requirements—it should be possible with the return of normal times to procure funds on far more favourable terms than the conditions of to-day would impose.

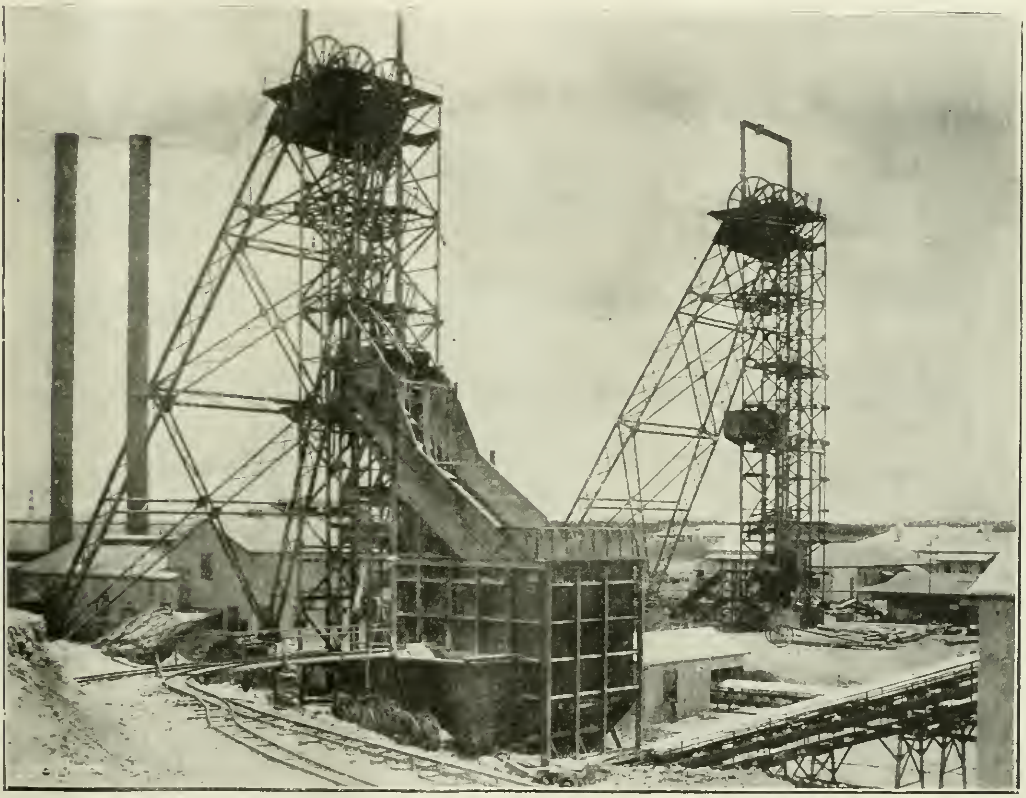
Shareholders will be invited to participate in the above-mentioned loan by circular to be issued at a later date.

By Order of the Board,
RAND MINES, LIMITED,
Secretaries.
S. C. STEIL,
Secretary.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXI., Part I.] JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 2, 1921 [No. 1540

TWIN SHAFTS AT THE MODDER DEEP.



The Modder Deep Levels annual report has just been issued, and it is satisfactory to note that the profit earned was £891,000, whilst at the end of the year the ore reserves amounted to 4,100,000 tons of an average value of 9.4 dwts. per ton. Up to date this company has earned a net profit of three and three-quarter millions on a capital of £500,000 in six years. The annual report is commented on in this issue of the Journal.

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Telegrams: "SIEMENS."

THE MODDER EAST CIRCULAR.

CENTRAL MINING TO PROVIDE £400,000—POSTPONEMENT OF MILLING WITH THE SIMMER DEEP-JUPITER PLANT—THE QUESTION OF DEVELOPMENT—TROUBLED FINANCES—MR. HONNET'S DIFFICULT POSITION—AN OBSCURE OUTLOOK—MODDER EASTS & NEW STATES: A STUDY IN METHODS.

In the following article we comment at length upon the new policy of the Modder East, which entails postponement of the erection of the Simmer Deep-Jupiter plant. The Central Mining & Investment Corporation is advancing the company £400,000 until the end of next year at 8 per cent. We deal hereunder with the new aspects of the proposition as seen in the light of this latest decision and the solution of the company's immediate and most pressing financial problems.

The pages of this paper recently have contained much about the Modderfontein East Company. We do not, however, consider it necessary for the Journal to make any apology for again reverting to the subject this week, since public attention is still largely focussed on this venture of unfortunate history and perplexing outlook.

Terms of the New Arrangement.

Just as the last issue of the Journal went to press an official circular explanatory mainly of the company's financial position was published in this and other papers, and was posted to shareholders. This *apologia* on the part of the board was received by us too late for comment in our last week's issue. The outstanding features of the circular are as follow:—

It was the board's intention to proceed with the erection of the reduction works at the earliest possible moment, assuming, of course, that the necessary capital could be secured. As a means to that end the directors sought from shareholders, and were granted, power to create and issue shares equal to the number that may not be taken up under the four-year option and such number as may not be absorbed by the debenture conversion right; they were also given authority to issue 122,124 shares, being the number of shares not called up under the three-year option, and these latter, together with 61,582 shares in reserve, were recently issued at par, under guarantee of the Central Mining and Investment Corporation, Ltd. That guarantee resulted in that corporation taking up 170,082 shares. Never in the previous history of the Witwatersrand have times been so unpropitious for raising large sums of money. The board has therefore, after very thorough study of the situation, decided to defer erection of the new plant. The estimate of the amount required over and above the company's present resources to pay off the debentures on the 31st July next and to complete the whole capital expenditure programme is about £1,100,000. The Central Mining and Investment Corporation, Ltd., has consented to grant a loan of £400,000 at 8 per cent. per annum from 30th June next, repayable on the 31st December, 1922, and secured by first mortgage on the property and assets of the company. They stipulated for the right to convert the loan into shares at par during that period, and the board have accepted the loan on condition that the Central Mining and Investment Corporation, Ltd., are to afford shareholders the

No. 1 Shaft, Modder East. The mill site on which the ill-fated Simmer Deep-Jupiter equipment is at some time to be erected is in the foreground. In the right-hand corner is a trial pit sunk to test foundations.

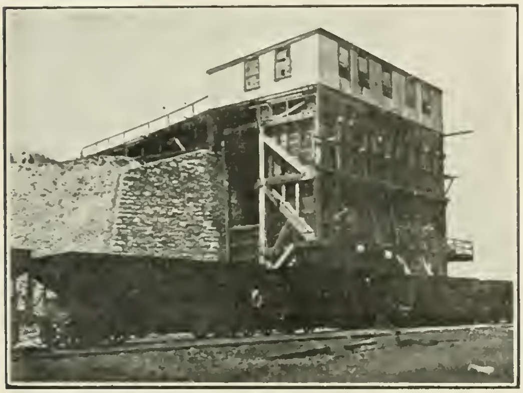
Photo specially taken for the S.A.M. & E.J.

opportunity of participating. The lenders have agreed to allot, pro rata to application, up to three-fourths of the loan, with option rights. The company's cash resources amount to about £200,000 to-day, and the procedure outlined above will permit the liquidation of the debentures at due date, and should also provide adequate funds for the continuation of an extended programme of development on the mine, while crushing operations at the Apex plant will continue on the present scale.

"During the period in question," says the circular, "a considerably greater knowledge of the mine will be made available, and assuming fair values attend the development—very necessary in view of the magnitude of the financial requirements—it should be possible with the return of normal times to procure funds on far more favourable terms than the conditions of to-day would impose."

The Board's Prompt Action.

Let us say at once that we congratulate the board on its decision to take time by the forelock, and acknowledge the exigencies of the case for a public statement, and not to await the medium of a quarterly report as a means of advising share, option and debenture holders of the present financial position of this company. The heavy fall in the shares and the obvious fate of the four-year options, the anxiety of debenture holders, the circulation of various rumours—many of them utterly absurd—and the general atmosphere of doubt and apprehension which is current in regard to this property, have all conspired to create a position which most certainly called for some statement by the board.



Ore Bins at the Modder East. The trucks are transporting banket to the Apex Mill.
Photo specially taken for the S.A.M. & E.J.

Numerous Accusations.

The accusations made against the directorate of this company are as varied as are the numerous rumours which have been current as to reconstruction, failure of the development scheme, possibilities of defaulting on the debentures, etc. The sum total of the indictment of the administration, however, boils down to an allegation of *suppressio veri suggestio falsi*.

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"INDENTING,"
C/o "S.A. Mining Journal,"
Box 963, Johannesburg.

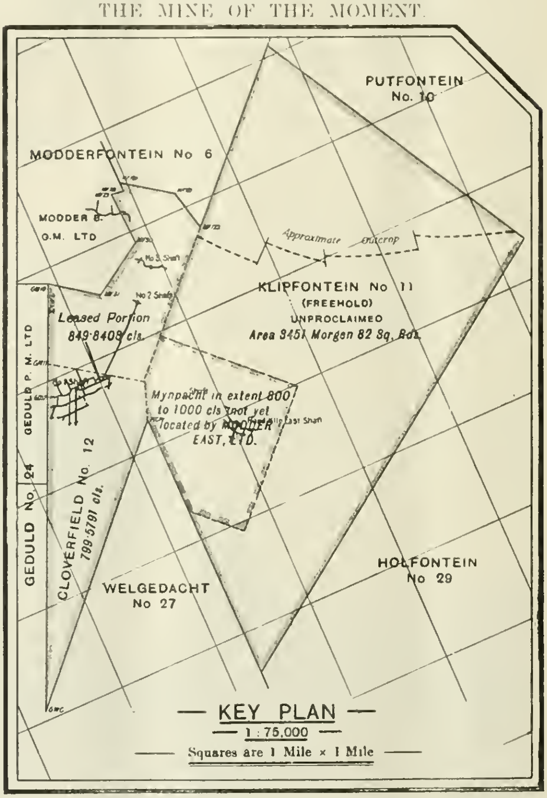
The Journal's Judgment.

Let us say at once that on account of the many letters which we have received on the subject of this company's affairs, and moreover on account of the numbers of stockholders who have called upon us and sought our advice, we have been in close consultation with Sir Lionel Phillips and with the chairman of the company, Mr. Max Honnet, and we cannot in the face of the facts in our possession support the accusation that there has been suppression of the truth or suggestion of the falsehood in the recent actions of the Modderfontein East board. Had the directorate not yielded to the pressure which we and others have brought to bear on them and published a statement as to the company's finances, we should certainly have not spared the Corner House with our literary cudgels.

Wanted £1,100,000!

But after a close investigation of the whole affair we are of the opinion that the board has acted as honestly as it can and with all the celerity in its power in publishing the statement contained in our last issue. It is perhaps not generally appreciated that in a circumstance of this kind involving hundreds of thousands of pounds at a time of great monetary stringency, a binding decision to provide a sum of money sufficient to meet even the temporary needs of this concern cannot be arrived at in a hurry. As Sir Lionel Phillips remarked to us the other day, the operation has constituted a most difficult bit of financing. Mr. Max Honnet, too, in discussing the circular with us pertinently asked the question "Who is going to advance the Modder East £1,100,000 in these difficult times in order to complete the whole scheme of development, equipment and debenture redemption of the company?" We frankly confess that this query left us completely dumbfounded for an answer. We can only remark that we have never possessed such a

THE MINE OF THE MOMENT.



Key Plan of the Modder East.

sum ourselves and that had we it in our possession at the moment we should not feel any vast inclination to invest it in the Modder East.

The Central Mining Loan.

We think that the company must account itself in these difficult days exceedingly fortunate in being able to secure £400,000 on terms which cannot be considered unreasonable in the present condition of the money market.

A Big Disappointment.

Of course it cannot be denied that inability to proceed with the re-erection of the Simmer Deep-Jupiter plant at the Modder East is a very severe disappointment to shareholders, and as things are at present he would be a bold man who would risk a prophecy as to what the position of the company will be at the end of next year when the period of the loan expires.

A Problem in Unknown Quantities.

Obviously the development exposures, price of gold, working costs and condition of the money market will in the main determine the ability or inability of the company to liquidate its indebtedness to the Central Mining Corporation by that time, and whether the company will be able before that date to proceed with the extended crushing policy, which is based on erection of the Simmer Deep-Jupiter equipment at the Modder East, remains to be seen.

Milling Results.

On the face of the recent milling results the prospect from a shareholder's view is hardly encouraging, unless the profits are materially augmented. Since crushing was commenced at the Apex mill in April, 1920, approximately a quarter of a million tons have been put through the battery. The returns month by month have been as under:—

Month.	Tons Milled.	Yield.		Revenue.		Costs.	Profit.	
		Declared Fine ozs.	Dwts. per ton.	£	Per ton. s. d.	Per ton. s. d.	£	Per ton. s. d.
Operations up to May, 1920..	18,500	2,459	2·658	11,835	12 10	17 2	3,998 loss	4 4 loss
June	21,000	5,100	4·857	24,353	23 2	20 1	3,302	3 1
July	24,000	7,618	6·348	39,425	32 10	27 0	7,005	5 10
August	20,700	7,323	7·075	41,007	39 7	33 3	6,575	6 4
September	24,200	9,857	8·146	56,432	46 7	29 10	20,289	16 9
October	26,600	10,916	8·208	63,858	48 0	27 5	27,362	20 7
November..	26,100	11,447	8·252	66,940	51 4	27 7	30,968	23 9
December	25,700	10,631	8·273	63,252	49 2	29 1	25,849	20 1
1921								
January	25,700	10,572	7·686	54,432	42 4	31 2	14,348	11 2
February	25,000	9,883	7·906	51,143	40 11	32 1	10,989	8 10

Limited Crushing Capacity.

The capacity of the Apex plant is limited to 27,000 tons per month as a maximum—the circular puts it at 25,000 tons—so that no large increase in profits would appear to be obtainable through application of that general panacea for all maladies of disappointing Rand mining venture—increasing the basis of production. Neither is one able to find much encouragement from the probable recovery values.

Ore Reserve Position.

The last published statement of ore reserves gave the company's tonnage at 1,755,400 tons of an average value of 7·75 dwts. per ton. From a reference to the table of milling results given above, it will be observed that in the months of September, October, November and December, 1920, and again last month the company was crushing ore of a grade in excess of the average value of this reserve.

Question of Development.

On one important point the circular now issued does not altogether satisfy the public. It scants the question of development. It merely states "assuming fair values attend the development—very necessary in view of the magnitude of the financial requirements," etc. Our own interpretation of the absence of information as to percentages of payability and inch dwts. disclosed by most recent operations is that development is not materially worse or better than in preceding quarters. Had any very sensible change taken place the Board would doubtless have made a reference to it, particularly if it had been better, although, as stated later on, it is a somewhat dangerous practice to issue short time statements as to development in such a huge proposition of fluctuating values as is this.

Our Own Interpretation of the Silence.

We construe the absence of any detailed statement of the development values recently secured to mean that nothing has taken place to justify departure from the policy of stating this information in the quarterly reports. In the December quarterly report development results were summarised as under:—

SHAFT.	Total Footage.	Footage on Reef.	Payable Footage.	Percentage Payable.	Average Width Inches.	Average Value Dwts.	Inch. Dwts.
No. 1 Shaft ..	2,494	2,080	910	43·8	22	26·0	571
No. 2 Shaft ..	1,266	1,110	1,000	90·1	19	20·3	386
No. 3 Shaft ..	891	570	285	50·0	35	7·0	245
Totals and Averages	4,651	3,760	2,195	58·4	23	19·3	445

The results to date are shown hereunder:—

SHAFT.	Total Footage.	Footage on Reef.	Payable Footage.	Percentage Payable.	Average Width Inches.	Average Value Dwts.	Inch. Dwts.
No. 1 Shaft ..	41,262	25,599	12,802	50·0	23	21·4	493
No. 2 Shaft ..	6,331	5,190	3,240	62·4	24	16·9	40
No. 3 Shaft ..	9,023	6,355	4,165	65·5	28	13·0	36
Totals and Averages	56,616	37,144	20,207	54·4	24	18·8	452

Since the end of the year development has, so we believe, been expedited, and we can quite understand an almost feverish anxiety on the part of the management to locate good stretches of payable values. What the next computation of ore reserves will be remains an unknown factor, but we hazard the opinion that unless a substantial improvement in the underground position takes place the average value is hardly likely to be in excess of the 7¼ dwts. per ton, which was the aggregate block value at the end of June last.

Ore Reserve Calculations.

Some people appear to believe that the Modderfontein East management should recalculate the ore reserves every two or three months or whenever there is any sensible movement in the values of the stock. Computation and valuation of ore in reserve is, however, a larger labour than the lay public imagine, and we do not see why an exception should be made of the Moderfontein East to the general Rand policy of calculating reserves annually. Whilst we fully recognise that there have been several unsatisfactory features in connection with the conduct of this company's affairs, we feel compelled to say that we have much sympathy for the Board in their efforts to right a position which they themselves in a large degree imprudently created by the method of financing which they adopted.

The Option Method.

But here again the administration can defend itself, although it may not be able entirely to clear itself in the eyes of the public. The policy of financing by means of options, which is in effect an attempt to raise money in three or four years' time on an expectation of circumstances which may very well not materialise—in this case the anticipations certainly have not materialised—is wrong, and is now generally admitted to be wrong. One hears the view expressed that the Modder East should have taken courage in its hands at the time of flotation and as in the case of New State Areas raised a sufficient sum of money to set the proposition on a firm and enduring basis of financial stability.

New States and Modder Easts.

But it should not be overlooked that whereas the sponsors of New States were betting on what looked to be as big a certainty as ever existed in Rand mining, the Modder East was a dive into terra incognita. New State Areas, "the jewel box of the Rand," was, from its geographical position essentially a proposition for bold methods, and the great firm which contracted to make that property a productive venture, and an undertaking sharing profits with the Government, did not hesitate to give its full wealth and ability to the property from the outset.

A Dive into the Unknown.

The Board at any rate of Modder Easts did not attempt to camouflage the fact that in floating a company to exploit Rand Klip, Cloverfield and the other claims they were taking a hand in an attractive speculation. They said this and their estimate does not seem to have been a false one, although it may be suggested that the word "attractive" might have been modified to mean something less alluring.

"Raising the Wind."

That, however, is beside the point now, and to return to the facts of the position as they stand in the light of to-day we would like to remark that it is perhaps not generally realised that the Board had numerous difficult negotiations both here and with London to arrange before being in a position to announce that a financial scheme which would enable the company to tide over its most immediate and pressing difficulties had been concluded. After all, money does not grow on trees and to raise the best part of half a million in these times on the scarcely gilt-edged security of Modder East is not quite such a simple achievement even for the Corner House as some people imagine.

A Difficult Position.

Neither is it easy for Mr. Max Honnet or the company's consulting engineer, or for that matter anybody else, to make a statement as to the company's development position and general prospects which may not tend to create a false impression in the minds of stockholders. In many ways it is a pity that the Rand ever gained the reputation of being an extraordinarily consistent goldfield. Over large areas it is undoubtedly the least fickle auriferous area on earth, but in respect of a comparatively limited number of headings going into a limited number of claims, values, width and percentages of payability may vary in most marked degree over short periods of time. If Mr. Max Honnet says this week that development values are less satisfactory than they were last week and on Monday one or two headings get into ounce stuff and the news leaks out, as it often does, somebody will want his blood before the week is over. And conversely if he says to-day that development values are better and to-morrow the blasts at certain important points disclose dyke matter some irate shareholder will contend that Mr. Honnet and all his colleagues are suppressing the truth and suggesting the falsehood. To parody Kipling we would say to Mr. Honnet, who has shouldered a big burden, and we say it sympathetically:

> "By all ye say or whisper,
> By all ye think and do,
> The disappointed shareholders
> Shall judge your House and you."

The Board cannot continually be making fresh calculations as to ore reserves and values, neither would it be wise or sound policy (even were it practicable to do so) to issue a weekly statement of the development. The company issues a very informative report every quarter, and we do not consider that departure from this policy would be in the interests of stockholders.

Was the Flotation Worth While?

We do not quite know what to think of the Modder East with its troublous history and nebulous prospects. We are almost inclined to believe that it would have been better had the Corner House's latest baby never been born into a world of travail and disappointment. And despite the unconfirmed allegation that certain people have made a great deal of money out of the stock, we are tempted to wonder whether the Corner House, too, does not share in the reflection that it might have been better if the proposition never had been floated.

ANSWERS TO CORRESPONDENTS.

C. W. Lush.—The whole subject will be covered in the forthcoming second Special Coal Number of this journal, which we hope to publish in June.

E. A. Adlam, Kokstad.—Thanks for the idea. We will see what can be done.

J. B., Kimberley.—On July 31, 1919, it was resolved to voluntarily wind up the affairs of the Selukwe Columbia G.M. Co., Ltd. Liquidator, J. W. Clark, 8 Old Jewry, London, E.C. 2. We suggest that you write to him.

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What's Wrong With South African Coal?

A CRITICAL COMPARISON WITH OVERSEAS FUELS—POLICY OF CONDEMNING LOCAL PRODUCTS—SOME INTERESTING ANALYSES.

(By a Special Correspondent).

In this critical article a correspondent, who is a fully qualified colliery manager, takes up the cudgels on behalf of South African coal, and claims that our products are not inferior to British and American coals. An interesting comparative statement of fuel values is attached.

In the South African *Journal of Industries* for February Major Trevor remarked on the tendency to decry everything produced in South Africa (he doesn't mention gold and diamonds). When any new industry is mooted there is the usual cry that it "can't be done," that the goods will be bad, that there is something wanting in our raw materials, and so on. And he tells the story of the old Colonel who avowed that "in this d—d country even the hens laid stale eggs."

A Great Transvaal Coal Mine: The Witbank Colliery.

South African coal has been no exception to this common damning process. A short time ago this journal printed an article by Mr. James Cuming, who gave instances of ships refusing Natal coal or only using it on sufferance. To begin with even the Natal railways "couldn't possibly use it" and had to be supplied with imported coal. We still suffer from this disparaging of our own product. Recently a Transvaal coal owner was heard to say: "Oh, of course it's nothing like Home coal, but it burns all right!"

A quarter of a century ago when Home coals were at the high peak of quality and there were plenty of seams to choose from, out here people were only finding out where coal was to be found, let alone where we could find the best, this *apologia* might have been justified. To-day, if it were asked: Is South African coal, as produced by collieries producing 50 per cent. of the whole output, inferior to the average Home coal, the answer is emphatically No!

Welsh and Scotch Coals.

Take the Welsh anthracite as the standard of British excellence. In mining text books the analysis of Welsh anthracite is given as: Carbon about 97 or 98 per cent., and ash about 2 per cent. or under. Sounds nice; but Bingham, in his book on Calcium Carbide, states the difficulty he finds in getting coal with less than 5 per cent. ash. If he has difficulty in getting even this grade of coal, one can estimate what the average will be!

In this country a seam of anthracite seven feet thick, with an analysis of about 6 per cent. ash, is perfectly well known, but unfortunately even now there is no large market for this fine coal.

In Scotland 25 years ago there was plenty of coal selling for a few shillings per ton with a guaranteed analysis of under 2 per cent. ash, some even under 1 per cent. ash. But that was in the heyday of good cheap coals, with plenty to pick and choose from. These were the times which gave Britain its stand and name in the industrial world.

In this country at that date there was only a little coal mining at Dundee, Lennoxton, and Elandslaagte, in Natal, and in the Transvaal, Springs, and a little from Middelburg. Now, however, the positions are reversed. *Tempore mutantur.*

Interesting Comparisons.

Recently Brownlee, in the *Chemical Journal*, gave a list of results from English coals, taken during 1917. Most of these were *washed* products, and so can be taken as at least equal to the average grade of coal marketed. The full analyses are not given, but the essentials for a steam coal valuation are given, viz., ash and calorific value.

For comparison with other countries' products we also print the analyses of five well-known American coals, and some Natal and Transvaal.

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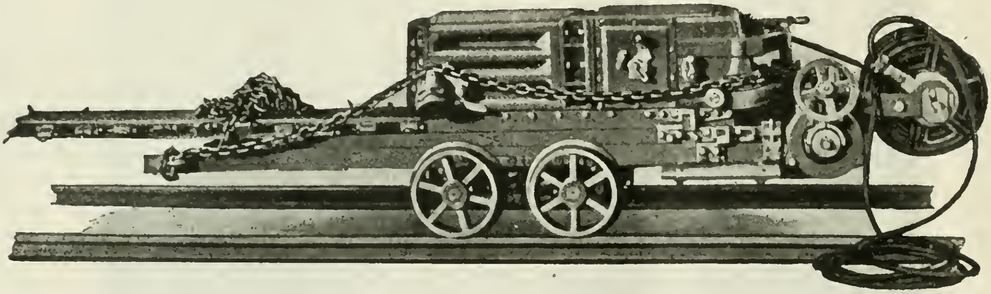

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Transvaal and Delagoa Bay Collieries.
Elandslaagte.

Newcastle Colliery.
Natal Steam.
Durban Navigation Coy.
Tendega Colliery.
Buffalo Collieries.
Natal Navigation Collieries.

BRITISH COALS SUPPLIED TO FACTORIES (1917) vide BROWNLEE.

Name.	Moisture.	Carbon.	Volatile.	Sulphur.	Ash.	B.T.U.
Explosives Factory, 1919					12·3	10,897
,, ,, 1917		Full Analysis not given.			13·7	12,825
,, ,, 1917					8·9	11,325
,, ,, 1917					11·6	11,793
,, ,, 1917					13·4	10,517
,, ,, 1917					11·7	11,251

ANALYSIS OF AMERICAN BITUMINOUS COALS.

Connellsville, Pa.	1·20	59·61	30·12	·78	8·23	14,050
Hocking Valley, Ohio	6.59	48·85	34·97	1·59	8	12,130
Muhlenberg Co., Ky.	4·33	55·50	33·65	1·57	4·95	13,060
Jefferson Co., Ala.	1·55	59·77	34·44	1·42	2·62	13.770
Missouri	6·44	47·94	37·57	—	8·05	12,230

NATAL COALS.

Newcastle	3·35	56·63	29·00	1·43	10·08	13,504
Dundee Coal Co., St. Georges ..	·84	68·94	24·46	1·53	5·76	14,722
Northern Natal Navigation ..	1·8	64·00	26·8	1·00	7·4	13.562
Zendega Gas Seam	1·3	67·1	24·00	·68	7·6	—
Natal Cambrian	1·25	68·25	22·2	–	8·3	13,939

TRANSVAAL COALS.

Witbank Colliery	·94	56·96	27·04	1·24	13·82	12,615
Coronation Colliery	1·09	58·79	26·06	·87	15·74	12,123
Uitspan	1·17	56·96	25·04	1·43	11·28	12,780
Tavistock	1·09	60·35	24·88	1·38	12·3	12,620
Anglo-French	1·33	60·15	24·65	·85	13·02	12,364

A Fair Railway Rate Asked For.

After comparing these analyses, who can say our coals here are inferior? Witbank seems low in value and high in ash, but it is certainly a better fuel than analysis shows, as it burns with an open loose ash.

There is plenty of coal in Natal superior to any of the analyses given, and it only requires a reasonable prospect of fair railway facilities and markets to see many new collieries opened there. In the Eastern Transvaal, too, it is well known there are huge areas already proved and only awaiting the prospect of a fair railway rate and treatment for work to be put in hand. In this we do not want to do more than mention unemployment, but the connection is obvious.

On the Natal Coalfields.

The Metal Market.

Messrs. H. A. Watson, in their latest metal report, state: Standard copper: The market has been quiet on the whole with a steadily declining tendency. Values have fallen from £71 cash and £70 three months, the closing quotations on 22nd ult., to £66 cash and £66 5s. three months, the close to-day. Closing quotations for manufactured copper are as follow. Strong sheets, £118 per ton; best select, £69 to £71 per ton; electrolytic, £71 to £72 per ton. Quotations for best select during the past fortnight were as follows: February 22nd, £74; February 25th, £72 10s.; March 1st, £72; March 4th, £70. Standard tin: The F.M. Straits Government is reported to have abandoned its metal buying policy, but it is understood that they will hold their stock for cost price, estimated at something over £200 per ton. The course of the standard market has been downward during the past fortnight. After closing on 22nd ultimo at £170 cash and £173 10s. three months, prices fell away from day to day, until the close on Friday last was £153 cash and £157 10s. three months, whilst to-day's quotations are unaltered. Tine ores: Recent sales include parcels assaying from 52¾ per cent. to 60 per cent. at prices ranging between £45 and £61 5s. per ton. Bolivian bars: There are no stocks; values nominally £123 to £143, according to quality. Sulphate of copper, £34 to £36 per ton. Spelter closed £24 5s. to £25 15s. per ton. Lead closed at £18 2s. 6d. to £18 15s. per ton. Bismuth, reduced on 19th February to 7s. 6d. per lb. Nickel, £205 per ton. Quicksilver unchanged at £12 10s. to £12 15s. per bottle. Bar silver: To-day's close is 31½d. spot and 30¾d. forward. Manganese ores: To-day's values are 1s. 9d. to 1s. 10d. per unit. Antimony: English regulus, £37 to £42 per ton; Chinese, £23 to £26; ores, no demand. Wolfram: A very slow market with prices nominally 12s. 6d. to 13s. per unit for ores of 65 per cent. W.O.^{3}.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES *vs.* **BAR FRAMES."**

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Modder Deep Levels.

A MINE WITH A BRILLIANT RECORD—LAST YEAR'S RESULTS—PROFIT OF £891,000—ORE RESERVES INCREASED TO 4,100,000 TONS, VALUE 9.4 DWTS.—THE COMPANY'S RECORD TO DATE.

The 21st annual report of the Modderfontein Deep Levels, which has just been issued, makes cheerful reading in these lugubrious times. It shows that a total profit of £891,308 was earned during 1920, and that the ore reserves have been increased to 4,100,000 tons of an average assay value of 9.4 dwts. per ton.

We hereunder comment on the sound position of this concern, and on the frontispiece of this issue appears an excellent photograph of the twin shafts of this property.

Few deep gold mining propositions in the world have achieved more profitable results on a moderate outlay of capital or have attained to such a position of development strength and profit earning security as the Modderfontein Deep Levels.

Up to the end of February this wonderful mine had produced gold to the value of £6,453,172 from 2,941,400 tons of ore crushed, had spent £2,685,672 on working expenditure, and had earned £3,767,500 in net profit, whilst the dividends paid to date amount to £2,725,000, or 545 per cent. on a capital of half a million.

The Reduction and Treatment Plant of the Modder Deep Levels. The twin shafts are to be observed in the background.

The Modder Deep's Situation.

The Modderfontein Deep Levels' property consists of 377·5 claims, which constitute a property shaped as an isosceles triangle, of which the base is bounded by the Van Ryn Deep, the northern side by the New Modderfontin, and the southern side by the Government Areas, whilst the apex of this triangle is in the New Modder-Modder B.-Government Areas angle. Few other mining ventures in the world can boast of such prosperous and fashionable neighbours as the Modder Deep. Its situation establishes the value of its claim area from end to end, and apart from extraneous factors, such as strikes, political changes and varying phases of taxation, it is scarcely conceivable that anything very serious can adversely affect the profits of this wonderfully prosperous mine.

Underground Workings.

The accompanying plan denotes the development position of this company and shows how favourably situated the area is in regard to other rich zones of the Far East Rand.

Ore Reserves.

The ore reserve position is of great strength. At the end of last year the developed ore reserves were 4,100,000 tons of an average assay value of 9·4 dwts. per ton over a stoping width of 77 inches. This tonnage represents about an eight years' supply for the mill.

Results to Date.

The Modder Deep Levels commenced crushing in 1915, and up to the end of last year the mine had milled 2,859,100 tons of ore for a working revenue of £6,220,861, or 43s. 6d. per ton, and a working profit of £3,629,271, or 25s. 5d. per ton. Working expenditure absorbed £2,591,590, or 18s. 1d. per ton.

It will be obvious from the foregoing facts that few mines are in a more favoured position than the Modder Deep Levels, and there can be no doubt whatsoever as to this company's ability to earn large profits for a number of years to come.

Mr. Anderson's Report.

The consulting engineer's report for last year exhibits the salient features of the operations during 1920. Mr. Anderson writes:

The working results obtained during the year 1920 show a further advance in profits earned and in the ore reserve position.

The tonnage milled was 507,700 tons, or 500 tons more than during 1919. The tonnage mined was increased by 35,000 tons, but underground and surface sorting was increased from 15·56 per cent. to 20·08 per cent.

The yield of gold per ton of ore milled was 10·55 dwts., compared with 10·31 dwts. for the preceding year.

The realised value of gold per ton milled was 57s. 9d., the working costs 22s. 8d. per ton, and the working profit 35s. 1d. per ton, being increases of 9s. 6d., 4s. 3d., and 5s. 3d. respectively.

The total profit from gold was £891,308. The addition of sundry revenue of £10,857 brings the total working profit to £902,165, or £137,739 more than the preceding year. These figures include an amount of £327,631 which was recovered in respect of premium and adjustments on gold, and which is equal to 12s. 11d. per ton milled and 24s. 6d. per fine ounce.

Working costs were further affected by increases in the rate of wages, both to Europeans and natives, to meet the increased cost of living, by the higher price of stores; and by the increased contribution under the Miners' Phthisis Act. The latter figure amounted to £22,618 for the year.

No expenditure was charged to capital account. The expenditure on additional cottages, extensions to offices, compound, workshops and steam plant, amounting to £18,574, was charged to working costs.

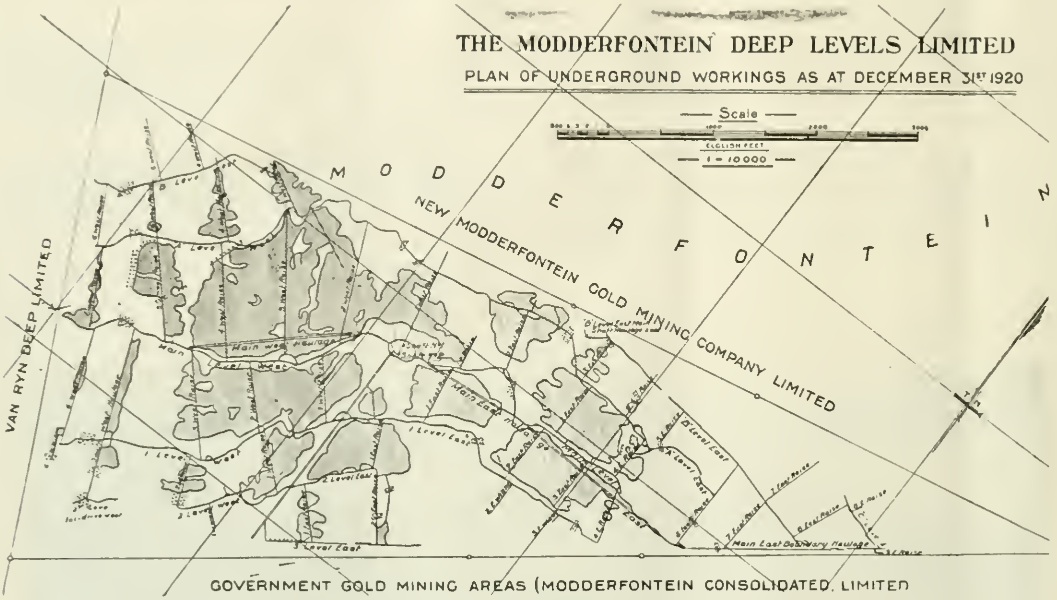
The supply of native labour was sufficient to meet all requirements. The health conditions have been satisfactory except for a slight recurrence of epidemic influenza. The death-rate from sickness was 11·18 per thousand, and from accidents 1·24 per thousand. The natives in the company's employ worked 98·96 per cent. of the possible time.

The stock of ore on the surface dump at the end of the year was 175,600 tons of stope and development ore. 7,000 tons were drawn from the dump during the year.

The footage of development done during the year was 7,688 feet, or 554 feet more than during 1919. The values disclosed were very satisfactory and well above the average of the mine.

The developed ore reserves as measured and valued at 31st December, 1920, amounted to 4,100,000 tons, having an assay value of 9·4 dwts. over an estimated stoping width of 77 inches. This is an increase of 325,000 tons and an increase of 0·3 dwt. in value, while the width is the same as last year.

The mine is in a very sound position from every point of view.


THE MODDERFONTEIN DEEP LEVELS LIMITED

PLAN OF UNDERGROUND WORKINGS AS AT DECEMBER 31ST 1920

Scale
ENGLISH FEET
1 = 10000
MODDERFONTEIN
NEW MODDERFONTEIN GOLD MINING COMPANY LIMITED
VAN RYN DEEP LIMITED
GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN CONSOLIDATED, LIMITED
Main West Haulage
Main East Haulage
1 Level East
2 Level East
3 Level East
Main East Boundary Haulage
N

North Oogies Collieries.

A NEW GOLD FIELDS VENTURE—SINKING A MAIN INCLINE—THE CORPORATION'S RECENT MISFORTUNES.

Amongst recent new registrations of companies in the Transvaal is that of North Oogies (Witbank) Collieries, Ltd., with a capital of £125,000, and head offices in the Consolidated Gold Fields Building.

As the address implies, this is a New Consolidated Gold Fields of South Africa flotation, and the concern has been incorporated to acquire and exploit a coal area on the farm Oogiesfontein No. 543, situated immediately north of Oogies station on the Johannesburg-Witbank-Delagoa railway line and close to the farm Kleinzuikerbosch, of the Tweefontein Collieries Company.

Sinking the Incline.

The Gold Fields people have been engaged in prospecting this proposition by means of shafts and boreholes for some time past and a long incline shaft is now being sunk into the coal seam. We sincerely trust that the Consolidated Gold Fields Company will meet with more success in the exploitation of this venture than it has met with in its former acquisition of Breyten Collieries, Ltd., and indeed in regard to its recent South African mining and industrial acquisitions generally.

How are the Mighty Fallen!

A few years ago the Gold Fields was the second mining house of the Witwatersrand, but in the last decade its outputs and profits have dwindled to an almost alarming degree. In the past twelve months the Simmer Deep and Jupiter have ceased operations and their equipment has been sold to the Modderfontein East. The Knights Deep mill has been destroyed by fire and that company has gone into liquidation. These misfortunes have come hot on the track of the group's unfortunate experience with Southern Van Ryn, which resulted in the Gold Fields relinquishing control and making a present of over £90,000 in cash to the former owners, its scarcely creditable association with South-West Diamonds, and its speculation in Rouxville Diamonds. The Gold Fields has been unfortunate in having to administer some of the lowest grade and most difficult propositions on the Witwatersrand, and of recent years it has not been lucky in its selection of investments and speculations outside of what is termed the legitimate Rand. If it can redeem any of its fallen fortunes by means of a further incursion into the coal fields of the Transvaal, the Gold Fields will be heartily congratulated by many Randites who have watched the decline of this corporation's former prosperity with genuine concern.

Letters to the Editor.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—As an old pioneer and prospector I came to the direct opinion long ago that the Government, then and now, as well as the International Financial Controllers of the Mining Industry, were and are, distinctly antagonistic to the exploitation of the mineral resources by which we are surrounded. Prospecting is inimical to their aggrandisement. In your last week's issue you mention the Wakkerstroom shales, Platinum and Vanadium discoveries, as also the re-discovery of payable gold bearing reefs in the Krugersdorp areas. This goes to show the inefficiency of the Mines Department, which is controlled by the Government, and this in turn is perhaps controlled by other influences. I was instrumental in discovering, amongst other things, a seam of coal of greater value underlying the present seam now being worked in the Middelburg coal area. I suggested that the then Government should put down a borehole for the benefit of the country at large. This has never been done and the coal is still there. Similarly on the Main Reef area there have been discoveries and indications that underneath this area there are still other reefs of a far richer nature than any yet exploited. All that is required is a series of boreholes to go through the underlying strata of this series, say in the neighbourhood of the Ferreira Mine or in the Krugersdorp and Germiston sectors. The cost would be small and the benefits to South Africa and the world beyond calculation. Yet this is not done at present. I use this expression "at present" advisedly. There is one obvious remedy patent to all the world: Follow the diamond industry, pool the output, and raise the price of gold to £6 and fix it there. Gold is of more value than diamonds. I should like to ask the croakers what is the real meaning of their lugubrious utterances, which so belie their actions. They know, and so do the banks and the Government, there is no reason for this direful campaign. They know there is ample justification for future optimism. They know still more reefs underlie those now worked out, and in their own good or baneful time they will develop them. The reason is obvious. The heads of these various departments, the Government, the Chamber of Mines and the banking controllers are not plungers; they deliberate, explore, exploit, chronicle and co-ordinate their knowledge, and they scheme and act at what to them is their proper time. All their pessimistic verbiage is a blind. The proof is the speeches of General Smuts, the advocacy of huge University buildings, the erection of portentous Chamber of Mines buildings, the extensions and additions of the National and Standard Bank buildings, the duplication of railways and the increase of dock accommodation. If they do not believe in our future they surely must all be verging towards imbecility. They say at the age of 30 onwards a man is at his prime. This seems to apply to the *Mining Journal.* Good luck! Cheerio!—I am, etc.,

R. W. HODGES.

[Thanks for the congratulations. But we cannot agree with you that the prevailing pessimism is a blind.

GEOLOGICAL SURVEY AND NIGEL QUARTZITES.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—It is over a year ago since you recorded the official announcement that the Director of the Geological Survey had found "certain strata with distinctive character below the Nigel quartzites which may facilitate the recognition of horizons in more distant areas." Could you possibly inform me what that announcement means? The phrase "recognition of horizons" will, I am sure, delight students of our Government geology.

For myself I would like to have detailed information about these "certain strata with distinctive character below the Nigel quartzites." As it stands that description is rather cryptic; why does not the Director of the Geological Survey tell us more about these strata and their distinctions? What are they—shales, quartzites, or conglomerates? In what position relative, say, to the Nigel Reef, are they to be seen? If the prospector were in possession of that dearly-won State knowledge, he could perhaps apply it and identify "horizons in more distant areas," which even if they contained no visible reefs would, owing to the presence of the "strata with distinctive character" pass as certified "Main Reef Leader," ground and come within the pale of the Department's geological decrees. The prospector would thus avoid the risk of paying licence money for years on ground which, although containing payable gold-bearing reefs, he might find at the most inopportune moment for himself was still not on the decreed "horizon."

It would also be possible if one only knew these "certain strata with distinctive character below the Nigel quartzites" to apply them as an acid test—fine union of words that "acid test"—to the "Main Reef Leader" on the Central Rand, for has it not been decreed that the Nigel horizon and the Main Reef Leader are one and the same.—Yours, etc.,

W. E. BLELOCH.

[In answer to this query we can only say that we have for a long time past eagerly awaited the publication of the Government's report on the geology of the Heidelberg district. Perhaps new discoveries have made it necessary to revise the reading of the various stratigraphical problems connected with this area.—Ed.]

Return of Prospecting Permits, Prospecting, Diggers and Base Metal Claims from the February Report of the Chamber of Mines.

Prospecting Permits	491
Prospecting Claims...	58,774
Diggers Claims...	43,298
Base Metal Claims	53,300

There is a slight falling off in the first three, and in base metal claims there is an increase of 1,755.

* * * *

Over-production of Coal in Belgium.

Owing to over-production and the difficulty of disposal, the coal mines of Belgium have decided on a complete cessation of work on every Monday until further notice.

The Coal Output of Great Britain during the month of January was 18,325,100 tons, and the number of employees was 1,226,300.

THE GREATEST VALUE IN MINING.

Southern Van Ryn.

£50 SIX-YEAR NOTES AND THE SHARES AT PRESENT PRICES.

The notes may be paid for at once in cash or in four quarterly instalments of £13 15s. each. The notes carry 10 per cent. current yearly interest, payable on the 1st of May in each year, and £50 deferred interest, payable on the 1st May, 1927, that is at the end of the six-year period of the notes. The £50 principal of the note is also payable on the 1st May, 1927. The notes therefore return £30 in current yearly interest, £50 deferred interest, and the principal of £50, or £130 in all. Before the end of the sixth year it is expected that the Company's yearly profits will more than cover the final payments on these notes (see Prospectus). With the great assets the Company possesses, free of debt and unencumbered, which includes **2,140 Claims on the Far East Rand with no Government share of profits to pay,** it will be seen that these notes are an exceptionally safe investment with great earning power.

Make good your losses on other stocks by getting in now, and share in the rise which is surely coming. Remember, the Van Ryn Reef has never failed to show rich development; to-day on the Southern Van Ryn it is 8 dwts.; to-morrow it may be 12 dwts., and you will see the wisdom of these words.

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AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House. 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

OUR PRESENT PLIGHT.

Straight Talking by "A Fellow with a Broom."

Some remarkably outspoken articles on what is termed the political welter of mediocrity into which British Parliamentary affairs have fallen have recently appeared in the English Press under the *nom-de-plume* of "A Gentleman With a Duster."

In "The Mirrors of Downing Street" and "The Ideal Cabinet," this brilliant writer deplores the lack of constructive genius amongst the clever talkers whose imagination is not inspired by idealism and whose puny actions and characters are not governed by moral law in the England of to-day. Furthermore, he states the essential principles of a policy of reformation and improvement which it seems to us would go a long way towards securing a better means—a far better means of securing efficient administration of the nation's affairs by a careful selection of those who are to hold high office under the Crown and by a well reasoned thesis of the functions and co-ordination of the various departments. These writings appeal to us immensely because they enunciate a fearless and brilliantly expressed method of solving many of the Mother Country's problems. They appeal to us especially inasmuch as the vigorous condemnations and logical remedies of "The Gentleman With a Duster" have some application to the present-day deplorable industrial *impassé* on the Rand.

They may savour too much of the Fisher type—that remorseless and fanatical school, the school of "sack the lot." But we think that some of the ideas of "The Gentleman With a Duster" might well be applied to the Rand.

There is quite a lot of dust that needs brushing off the shelves of our whole industrial structure. And better even than "A Gentleman With a Duster" would be "A Fellow With a Broom" to sweep away many past prejudices and to garnish the whole stable.

The Rand has lapsed into a state of industrial coma, and whilst on all hands the appalling plight of the mines is recognised nothing is being done to rectify the position or to place gold mining on a sound and stable basis. Let us dust away a little of the ash of ineptitude and of the lack of courage to face the truth and say right away that the first essential of the present position is that working costs are far too high; and this means that efficiency must be increased, stores must be more economically utilised, and the large numbers of surplus and unnecessary employees must be reduced, or wages will have to be cut.

Rates of pay on the mines to-day as a whole are too high. It is true that in many instances good work is not receiving its adequate reward, but in the vast majority of cases bad and indifferent labour is receiving more than its proper recompense. Taken on the whole the wages and salaries paid by the mines to-day are too high, and to continue to pay them is not justified by the revenue of the mines, the present position of and outlook for world trade and costs of living, and by the plight of the lower grade ventures. Neither is it in the interests of the community at large for the mining companies to continue to expend the sums of money that are being spent at present on a class of labour that is not notorious for efficiency or for any inborn and hereditary sense of the sound principles of mining.

If the East Rand Proprietary Mines were to close down it would be nothing short of a national disaster. Not only would fourteen hundred men be thrown out of employment at these properties, not only would thousands of others be indirectly affected, but the water troubles of the E.R.P.M., which are localised so long as the pumps on that property are working, would before long engulf the workings of other mines as far west as the Geldenhuis dyke if the E.R.P.M. ceased operations and made no arrangements to prevent the flooding of adjacent mines. And why should this heavily burdened company continue to serve the interest of other mines it it is unable to work at a profit? We think that unless the economic outlook for the Rand generally, and for the low-grade mines in particular, improves very materially, the establishment of a co-operative pumping scheme will have to be undertaken in the interests of the mining industry of the Central and Near East Rand generally.

But this is only one of a number of bits of constructive policy which appear to be obvious to the eyes of "the gentleman with a duster" or "the fellow with a broom." The better way, however, is to render it possible for low-grade properties to continue operations by making them profitable again. And this can only be achieved by the more economical consumption of stores, retrenchment on a considerable scale, or by a general cut in wages and salaries right along the Rand.

The price of gold is lower than it was a few months ago, the cost of living is slightly but sensibly less, unemployment is increasing, yet no very noteworthy effort has yet been made to effect any saving in costs of labour and stores which make up the bulk of working expenses.

Rand working costs in February were 28s. 6d. per ton, and the recovered yield per ton was 6·8 dwts.—in other words, with gold at normal price the output would just about have paid expenses, and all but the few rich mines on the Far East Rand would have to bow to the inevitable and cease working—several of them for ever.

No industry can go on like this. It is always an unsatisfactory thing to have to suggest that there should be retrenchment or that rates of pay should be reduced. It is an unpopular theme. But in the interests of the whole community it must be done, not only on the mines but on the railways, which so largely determine the economic conditions of the Rand and which despite ruinous rates are run at a heavy loss.

" The Gentleman With a Duster " is badly needed here to disperse the dust which lies so thick upon our industrial shelves, to uncover sound and sane thought, and to disclose the plain unvarnished truth that inefficients must be dispensed with, wages must be reduced, and efficiency speeded up both on the mines and in the head offices. " The Gentleman With a Duster " would be able to show that many men are in the wrong jobs and that the industry is attempting to fill round holes with square pegs.

Let us empty our dust-bin of prejudices and misconceptions and of lethargical ineptitude. Economise in stores consumption, select the best miners and retrench the surplus inefficients Reduce wages, increase output, if necessary put the whole Rand on a contract basis, remove the human low-grade propositions—the " unprofitables "—whether they be miners or managers or consulting engineers or directors—these are some of the requirements. We invite discussion on these matters. Several gentlemen of authority and knowledge have recently written to us on these subjects, and we want to hear from others.

Particularly do we want to hear from gentlemen with dusters who can disclose some constructive genius. And even more particularly do we await the voice of someone set in authority over us who will have the courage to say with the full weight of his office and responsibility either that large numbers of inefficients will have to be dispensed with or else that wages on the Rand will *have* to be reduced.

" THE FELLOW WITH A BROOM."

Notes & News.

South Africa's Trade in 1920.

The past year was remarkable for an extraordinary shifting of the balance of trade. The immense increase in the value of imports as compared with exports is now fully shown in the last Departmental return. Imports of merchandise in 1920 increased by £46,692,167, while exports of South African produce declined by £18,004,489. Including specie and articles for Government use, the totals were:

IMPORTS.

	1919.	1920.
Merchandise	£46,712,000	£93,404,000
Government use	4,078,000	8,422,000
Specie	2,827,000	4,100,000
Total	£53,118,612	£105,927,107

EXPORTS.

	1919.	1920.
S.A. Produce	£95,803,000	£77,799,000
Imported goods re-exported through parcel	118,000	178,000
To Rhodesia	1,312,000	2,321,000
Oversea	2,534,000	3,232,000
Total	£99,818,536	£83,632,484

The greatest increases in the imports were in the following lines:

	1919.	1920.
Cotton goods	£6,050,000	£10,512,000
Food and drink	4,851,000	13,099,000
Woollen goods	977,000	2,848,000
Leather goods	1,763,000	3,850,000
Iron and steel	2,119,000	4,205,000
Machinery	2,469,000	4,144,000
Wood and timber	1,247,000	3,442,000
Vehicles	1,932,000	4,642,000

These figures tell a convincing tale and are worthy of close study.

February Coal Output.

The largest aggregate output of coal sold in the Union for the past 12 months was in July, 1920, when 1,035,249 tons were disposed of for a value of 399,107. The largest cash value at pit's mouth was January, 1921, with 979,990 tons at a cash value of £465,764. Thus with a shortage of 55,259 tons, there was an increase in value of £66,657. And the ratio of this discrepancy is shown in the figures for February, which points to a steady influence in this direction

The aggregate value per ton at the pit's mouth shows a marked and steady increase :—

Year	Output. Tons.	Value.	Per ton.
1915	8,281,324	£2,142,479	5s. 2d.
1920	11,473,452	4,506,572	8s. 9d.

* * * *

The February Output.

	Tons sold.	Pit's value.	Per ton.
Transvaal	535,003	£183,167	6s. 10·17d.
Cape	447	314	15s. 4·70d.
Orange Free State ...	75,402	23,908	6s. 4·10d.
Natal	283,378	219,542	15s. 5·94d.
	894,230	£426,961	9s. 6½d.

It is interesting to note the discrepancies in the pit's value in the different centres of production. Whilst in the Transvaal and Orange Free State coal fields this value is in the region of 6s. 6d. per ton, in the Cape and Natal it is over 15s. per ton.

* * * *

The Union Steel Corporation's Exhibit.

One of the features of the machinery and industrial exhibits at the recently held Agricultural Show was the striking exhibition of the Union Steel Corporation. This took the form of a wonderful collection of the company's various products surmounted by a steel springbok and the Union's coat of arms also fashioned out of steel. A legend to the effect that it's the cock that does the crowing but the Vereeniging hen that delivers the goods also formed an interesting and thoroughly appropriate part of the exhibit.

Rumours are again current that some form of amalgamation of South African iron and steel interests is greatly desired in certain quarters. We will leave readers to guess whether the overtures were made by the cock or the hen!

Concerning Mines and Men.

Mr. W. S. Saunders, of the Consolidated Mines Selection, leaves by the " Llanstephan Castle " on a six months' visit to England.

* * * *

At the annual meeting of the Rhodesia Chamber of Mines, held on March 18th, it was agreed, with acclamation, on the motion of Mr. J. G. McDonald, seconded by Mr. A. R. Thomson, that Sir Bourchier Wrey be re-elected President for the ensuing year. Mr. B. W. Durham moved that Mr. J. G. McDonald be re-elected, and Mr. Theo. Haddon elected, as Vice-Presidents for the current year, and this was seconded by Mr. Noel Griffin, and agreed to. Mr. R. M. Nairn moved a vote of thanks to the President for his valuable services to the mining industry during the past year, the motion being carried by acclamation.

* * * *

Certificates issued by the Mines Department for the period ending 24th March, 1921: Mine Overseers (metalliferous mines): W. W. Hammond, W. J. Jooste, F. C. Pearce; (collieries) H. L. Taylor; (" non-fiery " collieries) R. J. Nairn. Mine Surveyors: P. Macdonald, S. C. Partridge, A. H. T Ablett, A. D. Allan, Roy Archibald, A. S. Arundel, E. Buchanan, T. D. Drury, B. F. Hewitt, W. H. Mackenzie; (works only) E. Buchanan, E. O. Jones, Electrical Engineers (mines): A. J. Adams, T. Berge, S. F. Hendry, F. O. Jaeckel, J. H. Sherman, R. G. Thorp; (works only) H. G. Symons, J. J. Ward.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

Forthcoming Meetings of Technical Societies.

American Society Mechanical Engineers.—Chicago, Ill. May 23-26.

Forthcoming Company Meetings.

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

Rand Selection.—Twenty-ninth ordinary general; Corner House; May 17.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House, May 17.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Knight Central.—Corner House; May 20.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Coal and By-products.

Corrosion of Coke Oven Walls.—*The Colliery Guardian.* March 4th, p. 641.

Belgian Coal Industry.—*Iron and Coal Trades Review*, March 4th, p. 322.

The German Coal, Iron and Steel Industries.—*The Iron and Coal Trades Review*, March 4th, p. 324.

Desulphurising of Coke by Hydrogen.—*Iron and Steel of Canada*, February, p. 5.

Engineering.

Turbo-blowing Plant at Ormesby Iron Works.—*Iron and Coal Trades Review*, March 4th, p. 313.

Lochaber Hydro-Electric Scheme.—*The Engineer*, March 4th, p. 286.

Standardisation in the Testing of Welds.—*The Engineer*, March 4th, p. 281.

Electric Trucks and Industrial Locomotives.—*The Engineer*, March 4th, p. 234.

Humphrey Pump.—*The Engineer*, March 4th, p. 232.

Electric Ships.—*The Engineer*, March 4th, p. 239.

The Mystery of Trevithick's London Locomotives.—*The Engineer*, March 4th, p. 242.

Chimney Draught Troubles.—*The Electric Review*, March 4th, p. 265.

The Temperature Limits of Large Alternators.—*The Electric Review*, March 4th, 291

Electric Traction.—*The Electrical Review*, March 4th, p. 294.

Internal Combustion Engineering.—*The Technical Review*, February 8th, p. 134 and March 8th, p. 230.

Electricity v. Compressed Air in Coal Mines.—*The Colliery Guardian*, March 4th, p. 641.

Industrial.

Packing for Export.—*Mining and Scientific Press*, February 19th, p. 255.

Metallurgy.

Consumption of Reagents used in Flotation.—*Mining and Scientific Press*, February 19th, p. 262.

Low Grade and Complex Ores.—*Mining and Scientific Press*, February 19th, p. 263.

Blow-holes in Castings.—*Iron and Steel of Canada*, February, p. 16.

New Type of Controlling: Valve for Supplying Air and Gas Mixtures to Open Hearth Furnaces.—*The Iron and Steel of Canada*, February, p. 18.

Iron and Steel.

Iron Ores of Commerce: With Special Reference to Canadian Deposits.—*Iron and Steel of Canada*, Feburary, p. 11.

Miscellaneous.

Hydraulic Mains and Ascension Pipes.—*Colliery Guardian*, March 4th, p. 639.

New American Warships.—*The Engineer*, March 4th, p. 227.

Bankers and Engineers.—*The Engineer*, March 4th, p. 240.

Karl Eilers v. Guggenheim.—*The Mining and Scientific Press*, February 19th, p. 264.

The Measurment of Lightning.—*Indian and Eastern Engineer*, February, p. 41.

The New Howrah Bridge.—*Indian and Eastern Engineer*, Feburay, p. 53.

The Indian Science Congress, Calcutta.—*Indian and Eastern Engineer*, February, p. 68A.

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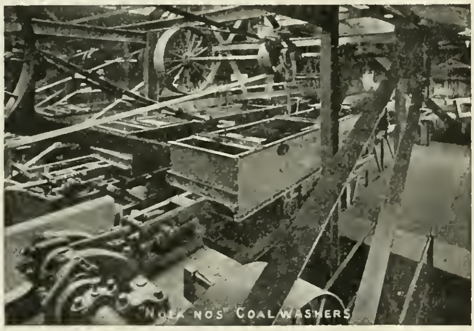

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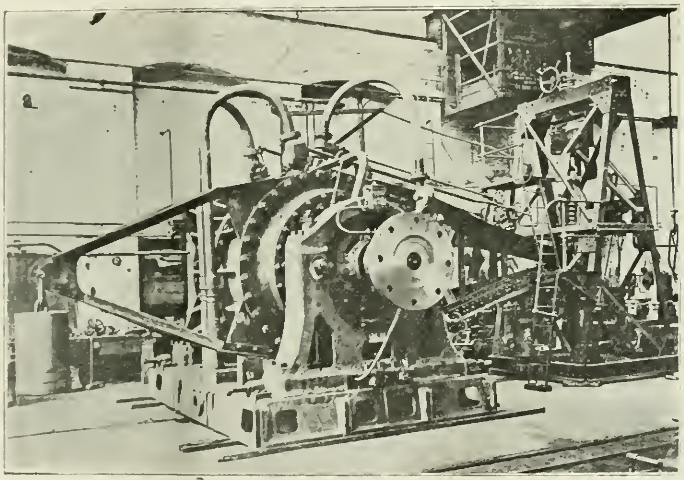
ENGINEERING SECTION.

The Froude Dynamometer.

The "Froude" Dynamometer was originally invented by the late Mr. William Froude for the purpose of testing all kinds and types of prime movers, the present D.P. machine being the prototype of the original. The standard machine, or that in which the brake is controlled by means of inlet and outlet valves is a modification, and this type is found most suitable for testing steam engines and turbines and prime movers of this type, while the D.P. machine is specially suitable for dealing with petrol engines.

Exactly what takes place inside the brake is interesting. The rotor is, of course, keyed to the shaft and rotates within a casing mounted on anti-friction rollers, the shaft and rotor being arranged for coupling to the engine shaft and free to revolve continuously, while the casing is free to turn on the same axis as the shaft, the amount of this rotation, however, being limited by means of suitable stops. Both rotor and casing are arranged with a series of semi-elliptical cups; these are formed by the introduction of vanes, semi-circular in outline in a circular channel. Water is introduced into these cups by means of a suitable inlet pipe connected with a channel formed at the back of the cups in the casing, and introduced directly into the cups through connecting holes arranged in the diaphragms already referred to. On the rotor being revolved with the brake full of water, the latter in the rotor cups is thrown outward by centrifugal force, ultimately acting on the stationary water contained in the cups in the casing and causing the formation of a vortex in the two cells.



Dynamometer capable of testing Diesel, etc., Engines developing up to 4,000 b.h.p. at a speed of 120 r.p.m. in either direction of rotation without uncoupling from the engine.

It will be readily seen that when the rotor is in motion the water flowing from the cells of the casing into those of the rotor has a considerable momentum given to it, and the rate of change of momentum which occurs forms a definite force acting on the rotor tending to prevent its motion, while on the other hand, water leaving the rotor and entering the cells in the casing has its momentum in the plans of rotation destroyed and consequently strives to rotate the casing.

Owing to the manner in which the vanes are inclined, the above process goes on until the frictional resistance is just sufficient to balance the force set up by acceleration of the water discs, and the higher the velocity the greater will be the resisting torque. The reason for the introduction of water into the brake by means of holes drilled through the vanes as previously mentioned is therefore apparent, as it is essential that the vortex motion of the water in the cells should not be disturbed.

Two types of this brake are manufactured, one known as the D.P. type and the other as the Standard type. In the former control of the brake is effected by the introduction of thin metal sluice plates, or diaphragms between the rotor and the casing, thus splitting up the vortex motion previously referred to, and consequently reducing the capacity of the machine. This type is specially suitable for testing motor car and aeroplane engines.

In the Standard brake the capacity is controlled by regulating the amount of water retained in the brake cups. This is effected by means of valves at inlet and outlet, automatically operated by the motion of the lever arm due to variation in load on the engine under test.

The load is applied in both types at the end of a lever arm rigidly fixed to the brake casing, in the D.P. machines taking the form of a spring balance and fixed weight, while in the standard machines by the suspension of dead weights. These weights are varied to suit the engine, fine adjustment in the load being made by means of a steelyard and poise provided for the purpose.

The horse power absorbed by any particular brake varies approximately as the cube of the speed of rotation.

Testing a Stope Drill on the Rand.

Huge Steel Rolling Mill.

The very large "three-high" mill for rolling plates, which has just been installed in a British steel works, embodies many improvements introduced by its British makers. This mill is designed to roll plates from one-eighth of an inch up to 1½ inches in thickness to a length of 60 feet and a breadth of 8½ feet. The maximum weight of the finished plate is 5 tons. An electric motor—also made in Great Britain—capable of developing 4,500 horse power, drives the mill, which is fitted with a 45in. flywheel, so that a total driving power of 11,500 horse power is available for heavy work. All the movements of this mill, from the receipt of a slab to the discharge of a rolled plate, are controlled electrically by two operators in an elevated "pulpit" immediately over one side of the mill. Manual effort is entirely absent.

Hydraulic Propulsion of Ships.

Extremely interesting experiments are now being carried out on the Thames in two British systems of hydraulic propulsion for ships. In each of these systems the propulsive effect is secured by the reaction of a jet or stream of water produced by a pump. The principle has been familiar to marine engineers for many years, but in these new applications a promising effort is made to obtain much higher efficiencies than have yet been secured. In one system the water is drawn into a cylindrical casing by rotating propellers and ejected to the rear, arrangements being made to keep the in-going and out-going streams of water separate. Speed control is obtained simply by rotating the inner drum of the casing. A launch driven on this system attained the speed of over 5½ knots with an engine of 7¾ horse power.

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Miners' Phthisis and Ventilation.

A CRITICAL EXAMINATION OF THE FACTS—COMMENTS ON THE PAPERS OF DR. ORENSTEIN AND MR. GRAY—THE NEED FOR FANS—SOME OUTSPOKEN VIEWS.

Lecturing at a meeting of the Chemical, Metallurgical and Mining Society of South Africa the other night, Mr. C. J. Gray, Inspector of Mines for the Johannesburg area, stated:—

Though immense amounts of thought, work and expenditure have been devoted to the prevention of miners' phthisis in the mines of the Witwatersrand, and great progress has been made, the disease is still very serious. As those who do not know the facts are tempted to assume that all that is possible to deal with dust underground has been done, it may serve a useful purpose if I point out some of the respects in which present conditions and measures are open to improvement. While the question as to what can be done is dominated by economic considerations, and it may be impracticable to make profit or avoid loss at a particular mine and at the same time do all that is desirable, even at such mines a clear recognition of how and where safeguards are weak may result in improvement. . . .

Ventilation, if not the most important factor in phthisis prevention, is certainly one of the most important, and much is to be gained from its improvement. If silica dust causes miners' phthisis, a badly-ventilated mine, other conditions being the same, must produce more phthisis than a well-ventilated mine.

We give hereunder a critical review, written by a competent correspondent, of the position prevailing on the Rand to-day in regard to ventilation and its incidence on phthisis.

In our next issue will be reprinted, with permission of the Chemical, Metallurgical and Mining Society, a paper read by Mr. C. J. Gray, Chief Inspector of Mines, Johannesburg, on miners' phthisis. The ravages of this fell disease came first into notorious prominence during the Anglo-Boer war, when so many men were in perforce idleness and congregated at the seaports.

Dr. Orenstein has remarked in an opening note in his "Miners' Phthisis Symposium": "There has been much writing on this subject," but unfortunately there has been very little action until recent years. The reasons of this apparent apathy are perhaps generally monetary. It is not inferred that the mining houses set their backs against spending money on ventilation or other means of lessening the trouble. But all attempts in this line cost money. Managers are only human, and naturally their own position was to them the most important consideration. To experiment or instal water service, or instal and maintain in order fans, cost money and adds to expenses. For many years even watering was optional, and even now fan ventilating is optional, and distribution of air haphazard. A manager who tried to better things would find his costs on sundry headings going up, and head offices would naturally compare his costs (to his detriment) with mines where nothing was being done. Improvement was thus stifled at its source, and for any marked betterment we have to look to legislation.

Ventilation the Root of the Question.

Ventilation, as Mr. Gray hammers home, is the root of the whole question; other methods are only palliative, but it will be difficult, as even yet there are many mine managers who do not understand the principles of mine ventilation and its application as exemplified in coal mines.

What the Journal said in 1906.

On August 25th, 1906, this journal published an article written by Mr. A. Danks, which is perhaps the first printed article calling attention to Rand conditions and pointing out the remedy. In 1909, Mr. Whitehouse, then at the E.R.P.M., wrote an article which was also published in this journal, in which he gave details of how he arranged the ventilation on that mine. This was, we believe, the very first attempt at systematic ventilation ever tried on the Rand. On August 25th, 1906, Mr. Danks wrote: "Sprays, atomisers, etc., are only playing with the evil."

"To our mind the only successful method of entirely overcoming the dust evil is in sweeping ventilating air currents—especially between blasting time and the start of the following shift—together with adequate watering of all broken ground, whether in stopes or drives. The sides, top and bottom of all drives should also be watered, so that travelling and shovelling would not raise more dust.

From observation of the behaviour of dust and smoke in air currents of mines it would seem as if the impalpable dust impregnated in our mine air more or less obeyed the laws of diffusion of gases that the observed facts in connection with the settlement of slimes holds good with the dust; that there is some action—probably electrical—which makes the atoms of dust mutually repellant, thus aiding their diffusion and overcoming the action of gravity.

In coal mines in Great Britain fans have been in operation for the past twenty years, passing as much air as would completely clear most mines here every hour. Yet here we find sixty miles of mines working under all conditions; we find men being killed by this deadly dust, and mining engineers, reputed to be the foremost in the world, either ignoring this state of things or tinkering at it with sprays, etc. Not one has the courage to spend the £5,000 or £10,000 necessary to instal a suitable fan and alter the mine arrangements to suit the application of mechanical ventilation."

Last week, before the C.M. and M. Society, Mr. C. J. Gray, whose paper may be taken as the latest word on present conditions, states: "Ventilation, if not the most important factor in phthisis prevention, is certainly one of the most important."

The problem of ventilation is very similar to that of ventilating a fiery colliery.

There is practically nothing (on Rand mines) which corresponds with the stopings and batteries used in fiery collieries to lead the air up to the faces of headings . . . practically nothing is done to split the air into satisfactory ventilation districts. It is often found on visits of inspection . . . . that there is no water supply. . . . The efficient use of water . . . . requires the constant and conscientious attention of both whites and natives. . . . Recent investigation has shown that the water blast is a very poor safeguard.

Need for Reform.

Could anything more damning be said about Rand mining methods? Fifteen years ago an article was written pointing out the dangers and the remedy. To-day the position is that some fans have been installed, but on scarcely a single mine has any great attempt been made to bring ventilation up to coal mining practice, and only to a very slight extent has anything at all been done to divide up the air so as to let each district or division of a mine have a fair quantity of fresh air.

The Cornish Graveyards.

Everyone knows the ravages of phthisis. In Cornwall there is not a graveyard in any mining district but what has numbers of gravestones marking graves of men dead in their prime, from 25 to 35 years of age. Ask anyone there what so and so died from; you will be told in the West Country dialect: "He b'long working on the Rand and came home to die." To-day it is no exaggeration to say 75 per cent of the miners here are inefficient, to use no harder word! And to-day in Cornwall there are about 6,000 good miners going idle. In Dolcoath alone there are 2,000 good miners idle. Not one will come to the Rand in spite of the big cheque. They go to America; they go to the Straits; they go in dozens to Nigeria and West Africa, and risk blackwater fever, but to the Rand, **No.**

Mr. Gray knows what he is talking about, and he puts the case very plainly. **Water is a palliative; ventilation is the cure,** but it must be proper ventilation, not passing a large quantity of air down one shaft through some levels and up another shaft The Home Coal Mines Act is very definite. It says an adequate amount of air must be provided in **every working place and road where men travel or work in, so as to render harmless noxious gases as soon as produced.** If that regulation were enforced on the Rand there is not a single mine of any size that could not show a clean bill.

Example of the Coal Mines.

On the coal mines in South Africa there are many—in fact most of them—where the conditions are equal to the best at Home. There is nothing inherent in a gold mine to prevent the same high efficiency being enforced. There would be a certain expense to begin with and certain changes in methods of working, but once these were made the extra cost would be small indeed when considered on the tonnage handled. That ventilation plus watering will bring about the cure there is no doubt. In conversation to-day Mr. Gray brought out that point still more clearly than even his article shows. A moderate amount of fresh air into a dead end or developing drive will in a short time show a very clean plate on the konimeter. When the question of how better ventilation conditions can be enforced here, we almost confess to despair.

Twenty years have elapsed since the bad conditions were recognised, and men with brains are still talking and doing only as little as the mining regulations compel them. Even high taxes under the phthisis compensation do not seem to move the directors of the "houses" to try and lessen the burden. These directors are human like the rest of us, but no one has given them a real lead, and possibly they do not want to spend money until they are sure. The managers' point has been already stated. Grandmotherly legislation is detested by all of us, but after turning it all over there seems nothing for it but rules and regulations down to the last nail in the brattice cloth, and enforce them rigidly till the good effect is apparent. In nearly every turn in mining this has been the case, and the Rand is no exception. Take the case of double shafts, an order which is almost world-wide.

Single and Double Shafts.

Fifty odd years ago single shafts were the rule with a division (often very crude) for ventilation. Seaham Colliery, Durham, was worked this way. A pump rod broke, knocked out the brattice division and some 300 lives were lost. Two shafts were made compulsory. This order never added a half-penny to coal cost, and whilst there was many a howl at the time it is now regarded as the only correct thing. Ventilation was another compulsory order at Home. The Inspectors have had to remove workmen till conditions were put right, and they were put right or the mines shut down, and no one grumbles now if an inspector charges a manager for bad ventilation, all the sympathy he gets is "serves him right." Till some such system obtains here we see little hope of betterment.

American Regulations.

In other countries the regulations as to men and air are stringent. In the U.S.A. it is enacted that not more than 75 men shall be employed in any one ventilating district and that there shall be at least 70 cub. feet of fresh air per minute per man employed. On the Rand we find to-day hundreds of men in one ventilating district and then the same air travels upwards and is used again to ventilate another mine (outcrop). In this case it has been clearly demonstrated that the air, in travelling upwards, had cooled and in precipitating its moisture had also got rid of the dust which was in suspension lower down the workings. Still, it is vitiated air, and there is no reason for its use except that it would cost a little money to alter the arrangements.

The Position in a Nutshell.

Summing up the position, the views expressed in this journal 15 years ago, that a sweeping ventilation on the lines of colliery practice were the only solution of the dust problem, has been confirmed by the most recent utterances. Sprays and watering help quite a lot, but won't cure the evil. Mr. C. J. Gray said in conversation: "The bottom of a sinking shaft with water flowing everywhere is often notoriously bad." Ventilation on colliery lines can be applied. There is nothing in Rand mines to militate against a sweeping ventilation. On the contrary, there are many things in support of its easy application. An important one is this. There are generally two or more adjacent payable reefs; workings in one can be made the return airway of the other. One reef workings can be used as an air crossing for a split in the other and so on. Once it is made COMPULSORY that pure air be provided in every working place and travelling road, ways and means will be found to meet the case. We show that no good results can hardly be looked for by leaving this question to the industry. Directors and managers are fettered. As one and all they are at the mercy of an invisible force behind, which, for want of a better term, may be described as the "investor." This entity has had its day, has had its full toll of human life and suffering and we insist now, nay, to use a word much abused by Labour leaders, we demand that the Mines Department take strong and immediate action to "strafe" this evil thing. There is not the slightest doubt that ventilation is the cure, but if Sir Robert Kotzé has any doubt let him free one or two of his staff from the drudgery of investigating the ordinary accidents which are of daily occurrence. Let him, we suggest, free Mr. Gray who has had a long acquaintance of this question and has the added qualifications of a thorough technical training and a close and practical knowledge of coal mine ventilation, especially as applied to fiery mines which, all agree, present many similar features as regards ventilation to a Rand gold mine.

"Options."

The following tabulated statement of current options will doubtless prove of interest to speculators in this class of scrip. We fear that the subject is a rather painful one to most readers, but the particulars given hereunder may be useful all the same.

Company.	No. of Shares.	To take up Shares at	Option Expires.
Daggafontein Mines 5-year Options	125,000	25/-	27-9-21
Frank Smith (7/6) Options	98,156	7/6	28-3-23
Geduld Proprietary 3-year Options	180,000	40/-	31-12-21
Modder East 4-year Options	373,616	22/6	2-7-21
Pretoria Silver-Lead Co. Options	115,000	25/-	— 9-21
Sakalava Options	60,000	10/-	31-10-21
S.A. Alkali Options	35,000	25/-	4-5-21
West Springs Options ...	115,000	22/6	9-7-21

* * * *

British Air Service Records.

Civil aviation in Great Britain opened in May, 1919, and from that time up to the end of last year British aircraft flew considerably more than a million and a half miles. The number of flights was over 62,000, and close on 110,000 passengers were carried. Goods to a total weight of 167 tons were transported, mostly on Continental services. The figures for each quarter show a marked increase in both passenger and goods traffic. The safety of the air service is indicated by the fact that the rate of passengers killed per ten thousand carried was only one.

RHODESIAN SECTION.

Rhodesian Chamber of Mines.

THE ANNUAL MEETING—POINTS FROM SIR BOURCHIER WREY'S SPEECH.

The annual speech of the Chairman of this corporation for 1920 is as usual a well thought out and delivered utterance. The Rhodesia Chamber of Mines is an important body, and its members certainly are not lacking invim and initiative, and thus come to a definite decision with sensible results. Last year they had the gratification of creating four separate records, these being an increase in the value of the metal and mineral output, the increase in the dividends paid in this section, the number of natives employed, and the decrease in death of these natives from general sickness, and a notable decline in the death-rate by accidents. Rhodesia, like every other country, suffered from the arrogance and tyranny of the paid labour union agitator; on account of the just concessions by the management to meet the extra cost of living, the mine employees developed symptoms of swollen heads, and blythely went from strike to strike, with the natural corollary of a decreased output, thus imperilling their own means of existence, the prosperity of the country and the comfort of all. But the gas is evaporating from the balloon. Below is the comparison of 1919 with 1920:

Metal and Mineral Output.

	1920.	1919.
Gold ...	£3,056,549	£2,499,498
Silver	58,178	34,099
Copper	333,111	207,470
Coal ...	252,220	189,137
Chrome ore	245,378	142,541
Tungsten ores	1,519	5,103
Asbestos	159,572	425,240
Arsenic	16,510	10,486
Mica	25,153	1,345
Antimony ...	219	—
Tin	661	1,060
Diamonds	1,918	3,083
Ironstone ...	—	313
	£4,450,988	£3,519,375

This is an increase in values of £931,613. Unfortunately there is no indication of the respective tonnages. The total gold production reached 552,498 fine ounces, showing a shortfall over the previous year of 40,724 fine ounces, which by the agency of the gold premium realised £708,432 over the normal pre-War value of £4 5s. per ounce. It should be noticed that the increases in the values of the two years' comparison was mainly caused by the inflated market values of the production.

Output to Date.

The grand total of the gold production in Southern Rhodesia from the commencement of the industry to the end of 1920 was £48,284,341, and of other metals and minerals £7,879,981, making a grand total of £56,164,322.

The Rezende: One of Rhodesia's Leading Gold Producers.

Dividends.

The dividends paid reached the substantial sum of £1,056,840, as compared with £578,201 of the previous year, an increase of £478,639. This satisfactory position of being the highest on record is, of course, attributed to the gold premium. The dividends declared by other than purely mining companies during the year reached £238,570, as against £330,945, a decline of £92,375. The native labour supply increased with a monthly average of 36,875, as compared with 30,678 in 1919, showing a satisfactory increase of 6,197. In this section the death-rates are interesting, they being 15·90 per 1,000 from disease, which is a record, while the rate of mortality from accidents is another record at 1·99 per 1,000.

Native Labour.

The Native Labour Bureau is a feature of utility organised and conducted by the Rhodesia Chamber of Mines.

and claims that hitherto it has been recruiting *en bloc*, and from the Bureau the farmers have drawn 54 per cent., general employers 20 per cent., the mines only taking 26 per cent. While the Chamber has been financing and is responsible for this feature, they are mulcted in a serious tax of one shilling per month per mine native, and the other employers go scot free. This should be a Government department and instituted here in the Transvaal.

A Good Prospect.

In general the mining outlook for Rhodesia seems very promising for the future, not only in gold, silver and copper, but with the further exploiting and development of their coal, chrome ore, asbestos, mica and arsenic, they have a future more dazzling than Tom Tiddler's ground. The strike lunacy will give place to sanity, and the firm sympathetic consideration of the management should soon result in a return to peace.

* * * *

THE LONELY'S OUTPUT.

The following are particulars of gold, etc., from the Lonely mine for the month of February: Mill ran 634 hours; crushed, 4,900 tons; fine gold recovered, 1,671·874 ozs.; value, £7,034 17s. 3d.; slimes treated, 4,900 tons; fine gold recovered, 3,104·844 ozs.; value, £13,067 9s. 3d.; total fine gold, 4,776·718 ozs.; total value, £20,334 9s. 6d.; profit, £33,157 17s. 3d. The above profit includes the sum of £20,102 6s 6d premium, August October, 1920, and £135 8s. 11d. adjustment November bullion.

THE WANKIE COLLIERY: A RHODESIAN PROPOSITION HARD HIT BY THE RECENT STRIKE.

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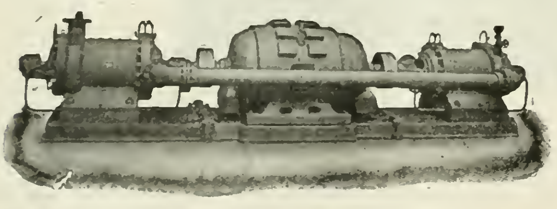

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(The yield from the Stock on the above terms is equal to **£6 3s. 8d.** *per cent. per annum, allowing for redemption at par in* 1950).

The Rand Water Board gives notice that it is prepared to receive applications for the above-mentioned Stock, free of exchange, at all the South African Branches of—

The National Bank of South Africa, Ltd., and
The Standard Bank of South Africa, Ltd.

Prospectus and Form of Application

and any further information which may be required regarding this issue of Stock can be obtained from the Secretary, Rand Water Board, P.O. Box 1703' Johannesburg, or at any Branch of the above-mentioned Banks.

The Week in the Sharemarket.

MODDER EASTS AND WEST SPRINGS FLUCTUATE—A DULL UNDERTONE.

On the resumption of business after the holidays the market opened and continued with a weak and dull undertone and a general tendency to lower prices all round. There has been a slight demand for Van Ryn Deeps and a decline in Modder East shares, which had a serious setback, notwithstanding the arrangement for a further loan to the company West Springs have fluctuated considerably Diamond stocks have also declined in sympathy with the financial position. There have been some enquiries for the shares of the new platinum flotation at a slight premium Tin stocks continue to be depressed.

Latest London Prices.

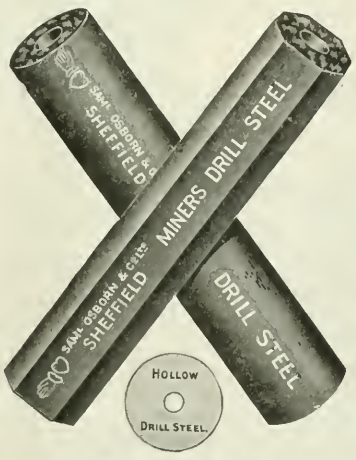
London, Wednesday, March 30.—Closing buyers: Geduids, 14s. 9d.; Rand Mines, 12s., New Modders, 64s. 1½d.; Modder B., 23s. 6d, Modder Deeps, 40s. 3d.; Van Ryn Deeps, 67s 6d; Anglo-Americans, 21s. 3d.

	Thurs. 24th.	Tues 29th.	Wed. 30th.	Thurs. 31st.
Anglo-American Corporation	20 6	20 0	20 0	20 9
Apex Mines	7 0*	7 0	—	—
Bantjes Consolidated	4 4	4 3*	—	4 0*
Brakpan Mines	—	50 0†	45 0*	—
Brick and Potteries		4 6*	4 6*	—
Bushveld Tins	0 6*	0 6*	0 6*	0 6*
Cinderella Consolidated		—	—	2 0*
City and Suburbans	6 6†	—		
City Deeps		40 6b	40 3*	40 6*
Clydesdale Collieries	—	27 0†	27 0†	27 0†
Con. Diamonds	14 0	13 6*	13 6*	13 6*
Con. Investments	25 0†	—	25 0†	25 0†
Con. Langlaagtes	—	11 0†	10 0	10 0
Con. Main Reefs	10 3*	10 3*	10 1*	10 3
Coronation Freeholds	0 9*	0 9	0 9*	—
Coronation Syndicates			3 0*	
Crown Diamonds	3 0	2 9	2 6*	2 6*
Crown Mines	—	41 0†	—	—
Daggafontein Mines	3 4*	3 3	3 3	3 0*
Durban Rood. Deeps	—	2 6*	—	—
East Rand Coals	—	2 3†	1 10*	1 9*
East Rand Deeps	0 6*	—	0 6*	0 6*
East Rand Props.	4 6	4 6	4 6	4 9
East Rand Debentures	—	£70†	—	—
Eastern Golds	0 8*	0 6	0 7*	0 6*
Frank Smith Diamonds	3 2	3 4	3 3	3 2
Geduld Proprietary	46 9	46 9*	46 9b	47 0
Glencoe Collieries	10 6*	11 0	11 0	11 0*
Glynn's Lydenburgs	9 9†	9 6†	9 0†	10 0†
Government Areas	77 9*	77 9*	78 0	78 3
Hume Pipes	—	—	—	20 0†
Jupiters	3 6†	3 4*	3 4	3 4*
Knight Centrals	3 8*	3 9	4 0*	3 10*
Knights Deeps	14 6†	14 0	14 0†	13 6*
Lace Proprietary	—		8 6†	—
Leeuwpoort Tins	6 6*	6 9*	6 9*	6 10*
Lydenburg Farms	—	4 6*	4 9*	—
Meyer and Charltons	85 0†	—	—	—
Modder B.'s	23 9	23 9	23 3*	24 0*
Modder Deeps	40 9*	40 9	40 9*	41 0
Modder Easts	10 6	11 9	9 10½	9 4½
Do. Options (4 years)	0 3*	0 4	0 2	0 3†
Natal Navigation Collieries	31 6*	—	—	—
National Banks	230 0†	230 0†	225 0a	220 0*
New Eland Diamonds	16 0*	17 0*	—	17 0*
New Era Consolidateds	6 9*	6 9*	6 3a	6 9
New Geduld Deeps	1 3*	1 3*	—	1 3*
New Heriots	8 6*	—	—	—
New Kleinfonteins	5 0a	5 0*	5 0*	5 0*
New Modderfonteins	65 0	65 0	65 3	65 0
New State Areas	21 3*	21 0*	20 3*	20 0*
Nigels	4 0*	—	4 0	—
Nourse Mines	7 0*	7 0*	7 0*	7 6*
Premier Preferreds	105 0*	105 0*	—	105 0*
Premier Cements	52 0	52 0	52 6	53 0†
Princess Estates	0 8*	0 8*	0 8*	0 9†
Rand Collieries	—	1 0*	1 0*	—
Rand Nucleus	0 10*	0 10*	0 10*	0 10*
Randfontein Centrals	9 0	8 0*	9 0†	9 0†
Randfontein Estates	12 6	12 9	12 6	12 3*
Roberts Victors	5 0*	5 6*	5 0*	5 9*
Rooibergs	3 0*	3 6	3 0*	3 0*
Roodepoort Uniteds	—	0 9†	0 9†	0 9†
Rouxville	2 0	2 9	2 0*	2 6

	Thurs 24th.	Tues. 29th.	Wed. 30th.	Thurs. 31st.
Ryan Nigels			3 6†	
South African Alkali	17 0	16 6	16 9*	17 6*
Do. Options	3 3	3 0*	—	3 0†
South African Lands	4 1*	4 1*	4 2	4 1
South African Townships	9 6	9 0	8 6	—
Southern Van Ryns	4 9	4 6†	4 6†	3 0*
Springs Mines	31 0*	31 6	31 0*	31 6
Sub-Nigels	11 6*	12 3	11 0	11 9
Swaziland Tins	—		5 0*	
Transvaal Lands	18 3*	18 3*	18 3*	—
Transvaal G.M. Estates	10 0†	9 3†	8 0*	—
Trans. and Delagoa Investments	50 0*		50 0*	50 0*
Transvaal Silvers	26 3*	27 3	23 0	22 9*
Van Dyks	1 3*	—	1 3*	1 3*
Van Ryn Deeps	67 6b	67 9	69 6b	69 3
Village Deeps	6 0*	6 0*	6 0*	7 0†
West Rand Consolidateds	—	2 0*		
West Springs	11 0	16 0	14 9	13 0
Do. Options	0 6*	1 3†	0 9	0 7
Western Rand Estates	3 0†	3 0†	3 0†	2 9*
Witbank Collieries	42 3*	—	—	
Witwatersrand Deeps	6 9*	6 9*	7 6*	7 6
Wolhuters	4 0	4 0*	4 0*	4 0*
Zaaiplaats Tins	3 0†	2 9*	2 10*	2 9
Union 5 per cent	£96½*	£97*	£97	£96*
Union Corporations	16 6*	—	—	—

West Springs.

The following cables have been despatched to this Company's London office for publication:—"Shaft No. 1 Reef intersected at 3,890 feet, width 8 feet 1 inches." "Official sampling, Shaft No. 1: 22 sections, 213 samples give 2.04 dwts. over 100 inches; total, 204 inch-dwts."



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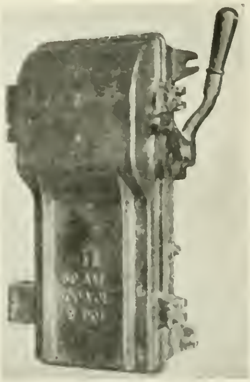
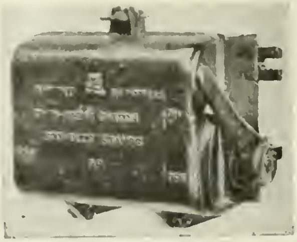
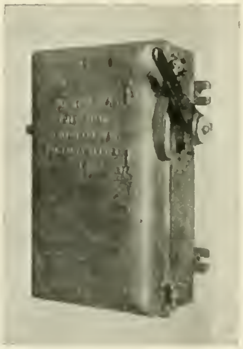
"HAND AND HEART" DRILL STEEL
Solid and Hollow.
LARGE STOCKS CARRIED LOCALLY.
SAMUEL OSBORN (South Africa) Ltd.
SHEFFIELD & JOHANNESBURG.

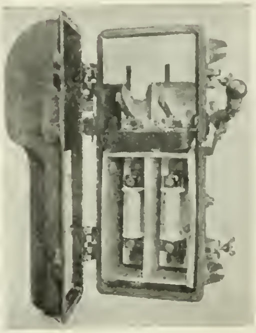


REGD. TRADE MARK



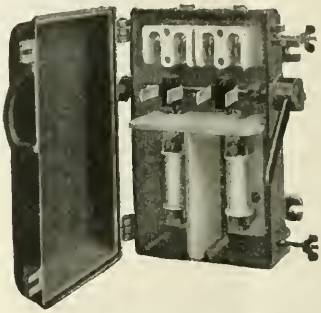
"TWIN BREAK" SWITCH WITHOUT FUSES.





"WITTON" SWITCH & FUSES.

HINGED COVERS CANNOT BE OPENED UNLESS THE SWITCH IS IN THE "OFF" POSITION.



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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—VIEWS OF A LEADING IRON AND STEEL IMPORTER AFTER RECENT TRIP TO ENGLAND AND AMERICA—TIMBER AND BUILDING MATERIALS—MINING AND AGRICULTURAL EXHIBITS AT RAND SHOW—ELECTRICAL GOODS—COAL CRISIS IN BRITAIN—FINANCIAL—IMPROVEMENT IN DIAMOND INDUSTRY.

General Position.

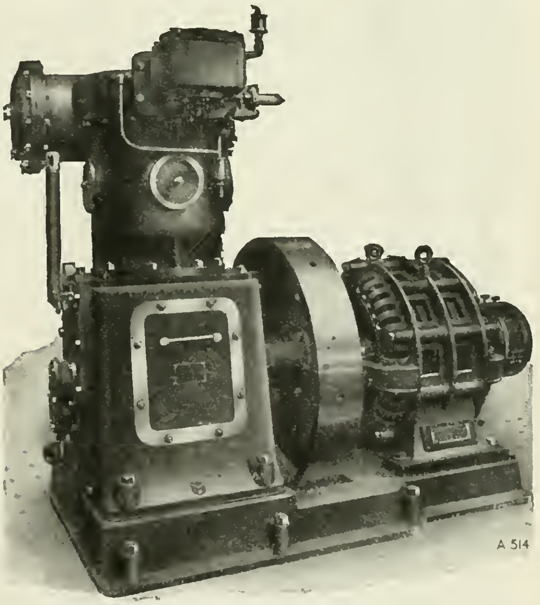
The week under review has been given up almost entirely by Johannesburg to the Agricultural Show, and in consequence of this and of the intervening holidays serious business has been almost at a standstill. That the Show was a great success, both in respect of exhibits and attendance of visitors, is an undoubted fact, and its educational value cannot well be overestimated. The Commercial Exchange has seldom been so inactive as at the present moment, and no radical relief is expected in general conditions before the turn of the half-year. The financial stringency is, if anything, somewhat more acute, but a silver lining appears in the general tendency overseas towards better prices in most industries, and the expert opinion that money conditions will shortly become better. The Bank of England rate, it is expected, may become easier at any moment. In the meantime there is no doubt that the general tendency for commodities is to ease off.

Iron and Steel.

The tendency of prices is still downward; nobody at the moment is ordering anything. On the Commercial Exchange the amount of business put through during March was very poor and disappointing. Undoubtedly this is the time for buyers to take advantage of the market, as it is generally conceded that prices are bound to firm up again shortly. Ruling quotations are: Imported iron and steel, flats, smalls, 40s. to 50s.; larger sizes, 38s. 6d. to 40s.; big sizes, 49s. 6d. to 55s.; ¼in. rounds, iron and steel, 69s. 6d.; 5/16in., 62s. 6d.; ⅜in., iron, 38s. 6d.; steel, 41s.; 7/16in., 44s.; ½in. and ⅝in. rounds, iron, 32s. 6d.; mild steel, 43s.; ¾in., iron and steel, 42s. 6d.; ⅞in. to 2in., iron, rounds, 39s. 6d; larger sizes, in iron, 52s. 6d.; 1in. to 3in., mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in., square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in., square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅝in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d. to 47s. 6d.; shafting, 3/16in., 1s. 2d.; ⅜in., 1s. 1½d.; 7/16in., 1s. 1d.; ⅝in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d to 8¾d.; larger sizes, 7½d. to 8d.; spring steel, flats, 8½d to 9d per lb.; mild steel plates, 1/16in., 42s. 6d.; ⅛in., 41s. 6d.; 3/16in., 40s.; ¼in., 37s.; 5/16in., 36s.; ½in., ⅝in., ⅝in., ⅞in. and 1in., 35s. to 44s.; bolts and nuts, ⅜in., 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d per 100lb.; ⅝in., 66s.; ¾in., 64s.; nuts, ⅝in. and ¾in., 87s. 6d.; fish plates, bolts and nuts, ⅝in., 1s. 4d.; ½in., 9½d. per lb.; ⅝in., 72s. 6d.; ¾in., 68s. 6d. per 100lb.; dog spikes, 43s. per 100lb.; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d.; ½in., 64s.; ⅝in., 60s. per 100lb.; tool steel, 3s. 6d. to 3s. 11d. per lb; brass rods, ⅜in., round, 1s. 10d; ½in., 1s. 8d.; ⅝in. and upwards, 1s. 6d. per lb.; ½in., 1s. 9d.; ⅝in. and upwards, 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d per lb.; copper tubes, 2s. 6d per lb.; lead, £39 to £40 a ton; zinc, 5d. per lb.; tin, 3s 3d; copper, 10½d.; drill steel, 7½d.; hollow, 1s. 0½d to 1s 1d.; solid drill steel is from 6d. to 6½d.; wire nails, 50s. to 65s.; shovels, 65s. to 85s. wheelbarrows, 67s 6d to 72s 6d; picks, 45s to 75s.; pick handles, 35s.; barbed wire, 33s. 6d to 42s 6d.; wire fencing, 30s. to 50s., according to mesh; screening, 3s. to 10s. per square yard, according to quality; Dunswart, 33s.; Union Steel Corporation, small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d. The demand for piping and fittings is poor; for 1in. galvanised iron, new, 1s. 1d. a foot; 1½in. in black, new, 2s. a foot.; 3in., 3s.; 4in., 3s. 6d.; 5in., 4s.; 6 to 12in., 7s. to 11s. 6d. a foot. Baling wire from 30s. per coil, 16 gauge.

In the engineering shops, owing to the close of the month, orders have fallen off again and business is not so good as it was up to just over the middle of March.

The latest reports from Britain regarding the iron and steel industry are to the effect that the situation generally has not materially improved. The chief event of the past



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Large Stocks carried in South Africa, ready for immediate delivery,
Steam Driven or Belt Drives.
SOLE AGENTS:
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week was a drop of 60s. in the price of hard steel billets to £15 a ton. Medium had a fall of 50s. while lower qualities receded from 14s to 10s.

Leading Steel Importer's views after recent trip to America, England, etc.

With regard to the drop in prices a leading importer said there can be no doubt that most merchants are to-day selling commodities at much less than replacement costs, owing to the financial stringency, but that these prices will obtain for long is very doubtful, as although manufacturers of steel plates and galvanised sheets have been working recently at about 50 per cent of their capacity, or even less in some cases, their overhead charges remain the same, so that they cannot cut their cost, and some makers in England to-day, as well as in America, are quoting galvanised sheets at less than cost of production; but they have now arrived at that point below which they will not and cannot go. One thing, he said, he would recommend buyers to do, and that was to buy at present prices, as within a very short while cost prices would go up. Exchange, which up to now had been favourable to this country, would also, he thought, be likely to prove less reasonable. Most iron and steel commodities are now just about as low as they can be, looking at things from a legitimate business point of view, and lower than they are likely to rule for some considerable time. As a matter of fact, latest advices from America report a slight advance in prices, which, however, cannot be reflected here immediately. Barbed wires and flats have been cut down as low as possible, and tin plates as well as galvanised flats and sheets are exceedingly low; the landed cost of the latter here at the coast being round about 80s. for the double box, which is the absolute minimum. One might, of course, obtain an odd parcel in London or elsewhere somewhat cheaper, but based on actual cost that price was the limit. That price, however, could not last, as many tin plate mills have been closed down in Britain and America. If parcels of, say, 400 or 500 tons galvanised iron were wanted in England or America, the price would be anything from £1 10s. to £2 a ton. As far as actual cost is concerned, this has been selling for some time below cost. Hollow drill steel is at the present time being sold at a reasonable price because there has been no reduction in it, in fact, the tendency is for it to go slightly higher, recent cables being to the effect that the market has had a slight rise. Plates have gone down considerably, but he believed that bottom had been reached at least for several months for good American or Canadian plates. Belgium plates, although cheaper, are too brittle for work on these fields, and cost too much labour for shaping it. The mines may save 1s. or 2s. per 100lb. on purchase price, but they lose much more than that in the cost of labour in bending the plates. For the last three months of 1920 things in America grew steadily worse, and were, our informant said, so critical, that many of the great commercial houses were in a hole temporarily, but the crisis was passed and the tide turned for the better after the turn of 1921. Since then latest cable and mail advices report a steadier tendency and an upward movement slight it may be, but still there. The motor car industry, which was in a bad way, is putting more men on. In conclusion, he said, that people in South Africa should be glad to live there. They had escaped most, if not all, the troubles experienced by other countries caused by the War, and he would recommend anyone here who might feel discontented with his lot to take a trip to England, America and other countries for a couple of months, and he thought he would return here very much chastened and thankful to be living in the Union of South Africa. There was, he said, absolutely no reason for the pessimistic talk going round, which appeared to be forced and used for a purpose. Considering the vast potential possibilities of South Africa, we had absolutely no reason to complain, but rather the reverse.

British Trade: Effects of Continental Competition.

Hopes are no longer entertained on the other side that any improvement will be witnessed in British trade generally before the autumn; a great deal depends naturally on the political situation in Europe. Work which is badly needed in the Old Country is going to Belgium, Germany, France and Holland, because British quotations are so much higher than those made by foreign firms. Nor are these quotations much to be wondered at when one considers the present high taxation, costly transport, heavy wages bills, etc. The immediate prospects in the iron and steel trades are regarded as discouraging, and unemployment is increasing. Notwithstanding very considerable reductions in prices, there has been no compensating accession of fresh orders; the output of steel in the Sheffield area is said to have dropped to the lowest point recorded for many years. From Birmingham, however, it is stated that more business is being done in agricultural implements.

Timber and Building Materials.

Business has been quiet during the week; a few local and country orders have come in, but the total is not very great. Prices remain much about the same, but the tendency is still an easy one. 3 x 9 deals are from 1s. 6d to 1s. 9d.; scantlings, 1s. 5d. to 1s. 7d.; floorings, 10d.; ceilings, 7d.; beaver board, 5¼d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d a cube; corrugated iron, 24 gauge, 10½d. to 11½d. Furniture timber is slightly easier; Japanese oak, 1s. 10d. to 1s. 11d. per square foot; Burmah teak, 23s. 6d to 24s. 6d.; American oak, 1s. 9d. to 1s. 10d.; 1in. boards, 24s. 6d. to 25s. per cubic foot; American black walnut, 1s. 9½d. to 1s. 10d.; West African mahogany, 2s 2d to 2s. 4d per square foot, according to quality.

Fair business is reported in the secondhand iron and timber yards, prices being unaltered at 1s. 4d. for timber and 8d. for iron. Casements are selling at from 9s. to 25s.; doors, new, 35s. and upwards; mouldings from 2½d.; baths from £10 10s., iron and enamel. Bricks are for wire cuts, 90s. to 100s.; for pressed, 85s.; and for ordinary stock bricks, reds and blues, assorted at the kiln, 47s. 6d. per 1,000. Damp course and roofing, 40s. for 1 ply; 52s.

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General Import and Export Merchants,

VENDORS OF

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Distributing Agents for

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Lubricating Oils and Greases,

MURITE PAINT AND CHEMICAL CO., LTD.

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6d. for 2-ply; 65s. for 3-ply. Cement, 11s. 6d.; white lime, 7s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d per bag.

At a conference of the Agents-General of the Dominions in London, presided over by Viscount Novar, the furtherance of the work of the Empire Forestry Association was strongly advocated; it was predicted that the Empire would shortly have to face a timber famine, and members urged the establishment of a permanent bureau to deal with the question at first hand.

As showing the present marked tendency of prices to fall in the building industry in Britain during the past few months, it is announced that tenders for workmen's cottages are now ranging about £700 compared with about £1,000 last month.

Mining and Agricultural Exhibits at the Rand Show.

Although necessarily somewhat belated, it may not be out of place to refer in passing to a few of the more important exhibits at the recent Show.

The triumphal arch exhibited by the Union Steel Corporation, Limited, which consisted of iron and steel, made to the design of Mr. G. Robson, the works manager in association with Mr. Roy Lewis, the managing director, attracted universal attention. Into the composition of the arch everyday articles of commerce in the steel trade, such as rails of all sizes, angles, squares, rounds, drills, T's, flats, shoes, dies, etc., were very cleverly woven and produced a very striking appearance. In addition the Union Steel Corporation displayed a full range of their products from the virgin ore to the finished commercial article, including rails, steel castings, flats, shoes and dies, railway vamps, billets, crusher jaws, etc. This exhibit was one of the most popular shown, and deservedly earned the gold medal of the Society. The Corporation it may be remembered, carried off a similar distinction last year.

The Hume Pipe Company's exhibit was referred to by us fully a fortnight ago. It proved a most interesting one to our many visitors, and it comes as no surprise that the company were accorded gold medals in respect of both concrete piping inside and concrete construction outside.

Stewarts and Lloyds (South Africa), Limited, had a fine display of machinery, included among which was a Climax windmill, a type of the National Gas Engine Company's internal combustion engines, a National Paraffin Engine pulling a Gilbert Gilke's centrifugal pump, a National petrol engine pulling a Burger's patent deep well working head, the latter being a local invention. Amongst other exhibits was a Warwick paraffin engine pulling a Stewarts and Lloyds figure 113 deep well working head, and a fine show of their locally made hand pumps. Their exhibits aroused the greatest interest.

W. R. Boustred, Limited, gave an interesting exhibition of steel ceilings, together with a range of internal appointments of every description for the house. This exhibition, comprising as it did, articles from the largest to the smallest, appealed very successfully to visitors.

The exhibit of Kynochs, Limited, showing a range of fertilisers, such as superphosphate, potato, maize, etc., together with highly purified acids, was also exceedingly well received.

Henwood, Son and Soutter had an admirable display of their well-known specialities, the articles used by farmers, etc., being much admired.

The Vereeniging Brick and Tile Company, Limited's exhibit was an educational one as regards all kinds of articles made from clay.

The gold medal was awarded the New Transvaal Chemical Company for their wonderful show of soaps, candles, greases and other chemical products.

Maythams, Limited, were exceedingly well represented by a wide range of articles, including travelling trunks in steel, rood, fibre and other materials, buckets, milk pails and geysers, baths, watering cans, etc.

Fraser and Chalmers (S.A.), Limited, exhibited a 5-ton and a 10-ton model of the Holt caterpillar tractor, which is gaining in favour every day all over the Union.

William Bain and Company (S.A.), Limited, had a fine selection of machinery manufactured by the well-known firm of J. and F. Howard, Bedford, England. They further showed a fine exhibit of the Emerson Brantingham Implement Company's standard mowers, which are in great demand in South Africa, and a fine assortment of Bentells, Maldon, Essex, food-preparing machinery, chaff cutters and mills, etc.

Mangold Bros., Limited, provided one of the most attractive exhibits in the implement section of the Show in the shape of a "Ransome" maize sheller, a "Homestead" maize sheller, together with threshers. The famous Key Conqueror, Defiance Disc, the Emperor, Demon, E.C.D. Jumbo potato and ridging ploughs were also on view, as well as a range of tractor ploughs and cultivators suitable for tractors. There was also a fine exhibit of mowers, rakes and harrows. Some of the famous "Lisher" oil engines all in motion and "Dandy" windmills in motion were also shown. Separators and churns were also prominent, as well as a display of hand pumps and several of the firm's own made brass cylinders for boreholes and deep wells.

The French Engineering Works, Limited, Johannesburg, exhibited the drill head with which at the Geduld Mine the other day the world's record for rock-driving was made. This drill was produced by the French Engineering Company, and shows hardly any effect from the work it has performed. All kinds of case-hardened and other steels were exhibited and proved of great interest.

Rogers-Jenkins and Company's exhibit consisted of some wonderful engineering and road-working machinery, as well as a wide range of builders' and contractors' supplies.

Electrical Goods.

Trading is quite good in electrical wares, fair orders coming in from the country districts in addition to the local requirements. Prices remain unchanged. The demand for half-watt lamps continues, but stocks of these are very slow in arriving; otherwise materials are coming to hand satisfactorily.

Coal Crisis in Britain.

There seems little prospect of averting a crisis at the end of March when the coal industry returns to private management.

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WRIGHT'S ROPES

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MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.

SURVEYOR'S CERTIFICATES — March, July and October (Extra) Exams 100 %, 50 % and 66 % respectively of S.A. total.

MANAGER'S CERTIFICATES. — Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A.

OVERSEER'S CERTIFICATES.—Two-thirds of the S.A. total for year

COAL CERTIFICATES.—Candidates being enrolled

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

The Miners' Delegate Conference has decided to reject the coal-owners' proposals for a wages settlement on the district basis and to adhere to their demands for a National Wages Board. The miners declare that the stoppage will be a lock-out, for the owners recently terminated the contracts of the men, who are now bound to resume work on April 1st on the reduced wages fixed by district agreement or cease work. Stocks of coal in England are large and foreign coal can be imported at cheap rates, so that should things come to the worst the public will not be greatly inconvenienced, at any rate for the present. Under the scheme formulated by the coal-owners, a certain standard wage is proposed in accordance with district conditions, in which the employers would take 17 per cent of the total standard wages as profit, and the surplus of profits would be divided on the basis of 80 per cent. to the miners and 20 per cent. to the employers, the latter foregoing their share of the surplus at the present time. These terms represent the limit to which the coal-owners can afford to go, but do not meet the views of the miners, who claim a national wage standard, and that wages should not be paid according to districts.

The unfavourable state of the coal trade was admitted by Mr. Hodges, secretary of the Miners' Federation, who stated—which statement is borne out by the South Wales Coal Owners' Association—that the pit-head loss in February exceeded two millions sterling, while only 14 companies out of 170 showed a credit balance. Notwithstanding which, as mentioned above, the Welsh coal owners have extended their offer regarding surplus profits to 80 per cent. to be applied to labour and 20 per cent. to capital.

Financial.

The National Employers' Federation expresses the opinion that the cost of living is likely to be reduced to 60 per cent. above the pre-War level by the end of the year. The latest market advices report the steady fall of retail prices resulting in the cost of living being substantially reduced and of a reduction in wages.

February statistics are again bad, disclosing a great reduction in trade activity, resulting in increased unemployment. The heavy cuts recently in prices of iron and steel goods will, it is thought, benefit many industries. The recent reduction in Treasury bills by ½ per cent. to 6 per cent. has brought down the discount rates for short bills for three months to 6¼ per cent. and six months to 6 per cent. The monetary position is tighter and the pressure is not expected to disappear until April, when it is generally expected that the Bank rate will be reduced by 1 per cent. and Treasury Bills are expected to drop another ½ per cent. It is reported that most of the non-ferrous metals at present stand below pre-War prices and certainly below cost of production. The reported closing down of certain producers at Butte has strengthened the market, and the further closing of unremunerative works, if vigorously pursued, is bound to have a steadying effect on the market.

American Reductions in Oil Prices.

Reductions have recently been made generally in the prices of gasoline and crude oil, following cuts made in the past few weeks. The Standard Oil Company announced the first reduction of motor gasoline by one cent. per gallon.

Improvement in the Diamond Trade.

It is gratifying to be able to record, in view of recent Kimberley and Premier Mine retrenchments, that a slight improvement is being manifested at Amsterdam, where one cutting works have re-engaged 100 cutters.

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GENERAL, MINING AND RAILWAY
ENGINEERS AND CONTRACTORS.

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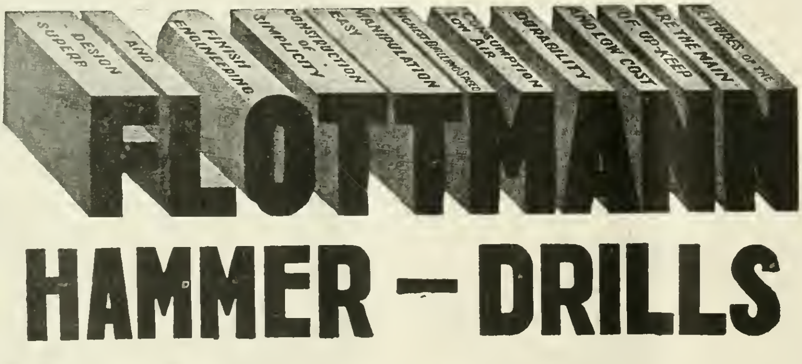

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A Welcome Sign of Progress.

THE AFRICAN THEATRES TRUST ENLARGES ITS BUSINESS.

In times like the present every sign of prosperity and enterprise is welcome, both for its own sake and for the sake of the country as a whole, and the prospectus of "African Theatres, Ltd.," which is published in this issue is a document that will be read with interest by everyone. Succinctly, African Theatres, Ltd., is a re-flotation on a very much larger scale of the African Theatres Trust, Ltd., and takes over the whole of the assets and business of that firmly-established and flourishing concern for a consideration of £500,000. The £500,000 is invested in 500,000 £1 shares, of which £100,000 are to be offered to the public. As the subscription list is to remain open for ten days only (till April 10) it is very evident that the underwriters of the shares (for they have already been fully underwritten) do not anticipate the slightest difficulty in the matter of getting the issue fully subscribed. Nor should they experience any, for the auditors' certificate shows that last year the African Theatres Trust, Ltd., made a profit of no less the £136,766—a figure which, on the new capital of £500,000, indicates a dividend of over 20 per cent.; so that, at a conservative estimate, and taking into consideration the increased turnover likely to result from the enlargement of the business, there does not seem to be any sound reason why African Theatres, Ltd., should not go on declaring regular interim quarterly dividends of 5 per cent., or more, from now till doomsday.

Except in the case of mushroom concerns with small financial stability and less technical skill behind them, the time is long since past when the amusement business had to be regarded as "a gamble." Theatres and cinemas are as much a part of our modern everyday life as shops and offices, the only difference being that, whereas in the latter we work for others, in the former others work for us; but all four are equally liable to circulate big sums of money, to give employment to large numbers of people, and to make two pounds appear where one existed before. What can be accomplished in the theatrical business by prudence, skill, judgment, foresight, and a steady and careful policy of expansion and acquisition, is strikingly evidenced by the record of the African Theatres Trust, Ltd., which, starting in 1913 with an initial capital of £12,500, has been able in eight years, to clear half-a-million in profits, and is now in a position to increase its original capital forty times over, and at the same time to embark upon a re-flotation scheme in which the very considerable value of its "goodwill" is entirely ignored in the purchase price. The new company's surplus of assets over liabilities represents over 25s. per share in assets for every share (including the new issue), and is about to be further substantially increased by the erection of two new and up-to-date theatres, one at Capetown and one at Durban, each capable of accommodating 3,500 people.

The following return shows the number of persons employed on the mines engaged on mining operations in the Union of South Africa during February.

All classes.	White.	Coloured.	Totals.
Gold Mining...	21,356	178.467	199.823
Diamond Mining...	1.728	16,493	20.221
Diamond Alluvial Diggers and Prospecting...	4,062	12,694	16.756
Coal Mining	2,166	37.978	40,144
Copper Mining	141	959	1.100
Tin Mining	145	2,048	2.193
Other Base Minerals	258	3,432	3.690
	31,856	252,071	283,927

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Get away from the smoke and dust, industrial strife and midnight dissipations and spend your days in tranquility amid **Orange Groves**, Mountain and River Scenery and no **financial worry.** You may have thought you would be a **millionaire** one day and you have, of course, been disappointed. But give up the idea and be satisfied with **More** than **Enough** to live on and a holiday when you want it.

Enjoy the refinements of civilised life in the closest proximity to **Nature.**

The Orangia Estates have Orange Trees from 5 to 10 years old, each bearing this year from 300 to 1,200 oranges. Visit the Estate and inspect the trees and count the Oranges on them.

By paying 5 annual instalments "The Orangia Estates" will give you an orchard planted, **not next year**, but right **now, this year,** with orange trees. The trees are there. The ground is irrigated, and the trees will be cared for during the 5 years. At the end of 5 years the wise purchaser will be **independent for life.** The proposed township, in which a site is guaranteed to the purchaser of an orchard, is so situated that it might have been designed by nature for that purpose.

The ground is freehold. Title deeds are deposited in the Standard Bank.

The Directors are: Dr. R. A. Ross, F.R.C.S., Bedford, C.P.; L. M. Ross, Esq., Venn Cross, Bedford; T. W. Gaudie, Esq., Registered Public Accountant, Boksburg and Benoni.

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Transvaal Consolidated Land And Exploration Co., Ltd.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-sixth Ordinary General Meeting of Shareholders for the year ended 31st December, 1920, will be held in the Board Room, The Corner House, Johannesburg, on Wednesday, 15th June, 1921, at 11.30 a.m. for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st December, 1920, and the Reports of the Directors and Auditors.
2. To confirm the appointment of Mr. F. H. Wallers as a Director of the company in the place of Mr. H. C. Boyd, resigned, and to elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.
3. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
4. To transact any other business which may be transacted at an ordinary general meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from 9th to 15th June, 1921, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the meeting must deposit their Share Warrants at the places and within the times following:

(a) At the Head Office of the Company, in Johannesburg, at least three days before the time appointed for the holding of the meeting.

(b) At the London Office of the Company, No. 1 London Wall Buildings, London, E.C.2, at least 30 days before the date appointed for the holding of the Meeting.

(c) At the office of the Credit Mobilier Francais, 30 and 32 Rue Taitbout, Paris, at least 30 days before the date appointed for the holding of the Meeting. Only Share Warrants bearing French stamps can be deposited at the Credit Mobilier Francais;

and shall otherwise comply with the "Conditions as to the issue of Share Warrants" now in force.

Upon such deposit a certificate, with Proxy Form, will be issued under which such Share Warrant-Holders may attend the Meeting either in person or by proxy.

By Order of the Board.
W. E. S. LEWIS,
Secretary.

Head Office,
The Corner House,
Johannesburg.
22nd February, 1921.

Transvaal Silver and Base Metals, Limited

(Incorporated in the Transvaal.)

Notice of Extraordinary General Meeting.

NOTICE IS HEREBY GIVEN that an Extraordinary General Meeting of the Company will be held in the Board Room, General Mining Buildings, Main Street, Johannesburg, on the 21st day of April, 1921, at 11 o'clock in the forenoon, for the purposes following, namely:—

(a) To consider and, if deemed fit, to confirm and approve, with or without such modifications as may be agreed to between the parties, a provisional Agreement which has been entered into between the Board of the Company and the General Mining & Finance Corporation, Ltd., whereby it is provided that the Company shall increase its capital to £300,000 by the creation of 160,080 new shares of £1 each, whereof 139,920 shares shall be offered to existing shareholders registered at a date and for a period to be fixed by the Board of the Company for subscription at the price of 21s. per share, payable in full upon application, being on the basis of one new share for every share then held. The Corporation guarantees the subscription of the said 160,080 new shares at the price of 21s. per share and shall forthwith subscribe and pay for the difference (if any) between the number of new shares subscribed for by shareholders and the minimum subscription (which is 75 per cent. of the 160,080 new shares). With regard to the balance of the 139,920 new shares (if any) unapplied for by shareholders and the remaining 20,160 new shares, the Corporation shall subscribe for the same from time to time in such parcels as the Company may require for the purpose of its working costs and expenses from time to time. In consideration of its guarantee, the Corporation shall receive from the Company a cash commission at the rate of 1s. per share on the said 160,080 new shares, payable in full forthwith after expiration of the period during which the said new shares will be offered to shareholders.

(b) In the event of the said Agreement being confirmed as aforesaid, to pass Resolutions increasing the capital of the Company to £300,000 by the creation of 160,080 new shares of £1 each and authorising and empowering the Directors to carry the aforesaid Agreement into effect.

A copy of the said Agreement will lie for the inspection of shareholders during business hours at the offices of the Company, General Mining Buildings, Johannesburg.

The Share Register of the Company will be closed from the 11th day of April to the 21st day of April, 1921 (both inclusive).

By Order of the Board,
J. V. BLINKHORN,
Secretary.

General Mining Buildings,
Marshall Square (P.O. Box 1173),
Johannesburg,
29th March, 1921.

South African Railways and Harbours.

Electrification of Capetown-Simonstown and Durban-Pietermaritzburg Lines.

TENDERS ARE INVITED for further plant in connection with the electrification of the above railways as follows:—

CAPETOWN-SIMONSTOWN LINES:

(8) Overhead Equipment of Permanent Way and Overhead Transmission Line.
(9) Switchgear and Accessories.
(10) Track Bonds.

DURBAN-PIETERMARITZBURG LINES:

(8) Overhead Equipment of Permanent Way.
(9) Overhead Transmission Line.
(10) Switchgear and Accessories.
(11) Track Bonds.

Separate Specifications and Forms of Tender for each of the above sections may be obtained at:

The Office of the High Commissioner for the Union of South Africa, Trafalgar Square, London, on and after the 29th March, 1921, or

The Office of the General Manager, Johannesburg, on or after the 15th April, 1921.

The Consulting Engineers, to whom applications for any further technical information may be made, are Messrs. Merz and McLellan, 32 Victoria Street, S.W.1, London.

Contractors may tender for all or any of the above sections.

The charge for each specification is £5 5s for the first copy, and £2 2s. each for any further copies. Sums paid for any number of each specification up to three will be refunded on receipt of bona fide tenders. Sums paid for copies of specifications beyond three of each will not be refunded.

Sealed Tenders, marked "Tenders for Electrification of South African Railways" are to be addressed to the High Commissioner for the Union of South Africa, and lodged at his office in London by noon on Wednesday, the 22nd of June, 1921.

The Administration does not bind itself to accept the lowest or any tender.

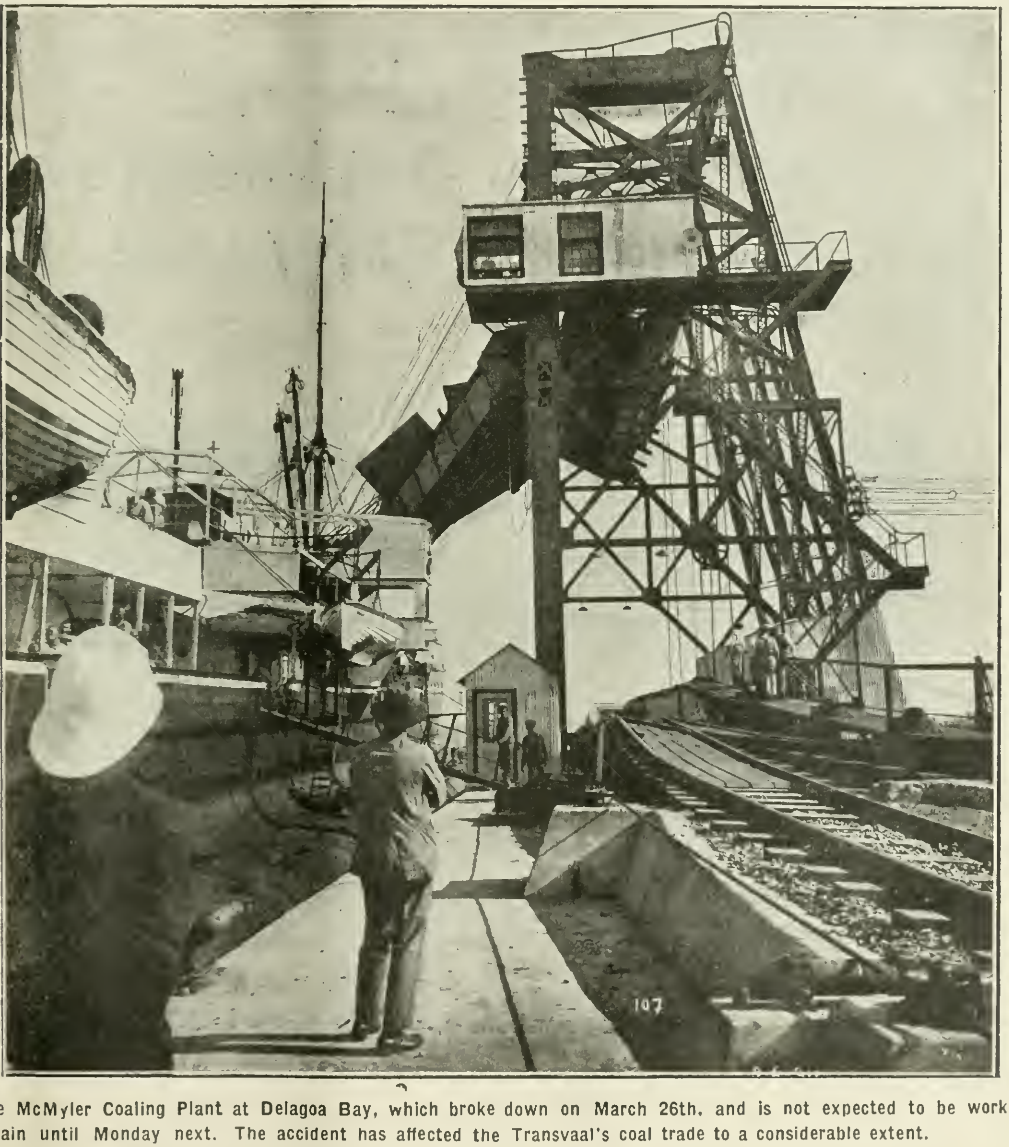
W. W. HOY, General Manager.

Johannesburg, March, 1921.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

VOL. XXXI., PART I.] JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 9, 1921. [No. 1541.

BREAK DOWN AT DELAGOA.



The McMyler Coaling Plant at Delagoa Bay, which broke down on March 26th, and is not expected to be working again until Monday next. The accident has affected the Transvaal's coal trade to a considerable extent.

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Telegrams: "SIEMENS."

The Industrial Crisis in England.

THE GREAT BRITISH COAL STRIKE—ITS POSSIBLE AND PROBABLE REACTIONS ON THE SOUTH AFRICAN MINING INDUSTRY—HIGHER PRICES FOR COAL AND GOLD?

In the accompanying article the incidence upon South African industries of the present deplorable strike in England is discussed and the probabilities of an increased demand for South African coal and the possibilities of an advance in the price of gold are referred to. At the moment of writing it is declared in London cables that it is generally regarded as certain that the Triple Alliance will decide actively to support the miners. The attitude of the transport workers at present is not definitely known, but it is understood that owing to the prevalence of unemployment among the transport workers the unity of their federation is problematical. Anyway, the leaders of the Triple Alliance are expected to defer the strike order until they have made an effort at a peaceful settlement. The outlook on the coalfields, however, is stated to grow progressively worse.

All eyes in the financial and industrial world are at present turned on Great Britain, where a calamitous coal strike, which may have the active support of the Triple Alliance of Labour, threatens to paralyse industry and to almost imperil the solvency of the Mother State of the British Commonwealth.

Whilst we greatly deplore the reign of industrial insanity in England, we cannot help pointing out that the great coal strike may well have influences of such a far-reaching nature that South Africa will reap considerable benefit from this latest mad escapade of organised labour.

It is a sorry reflection that the Union of South Africa, the youngest of the Mother Country's dominions, will profit by England's misfortunes.

Effect on Coal and Gold.

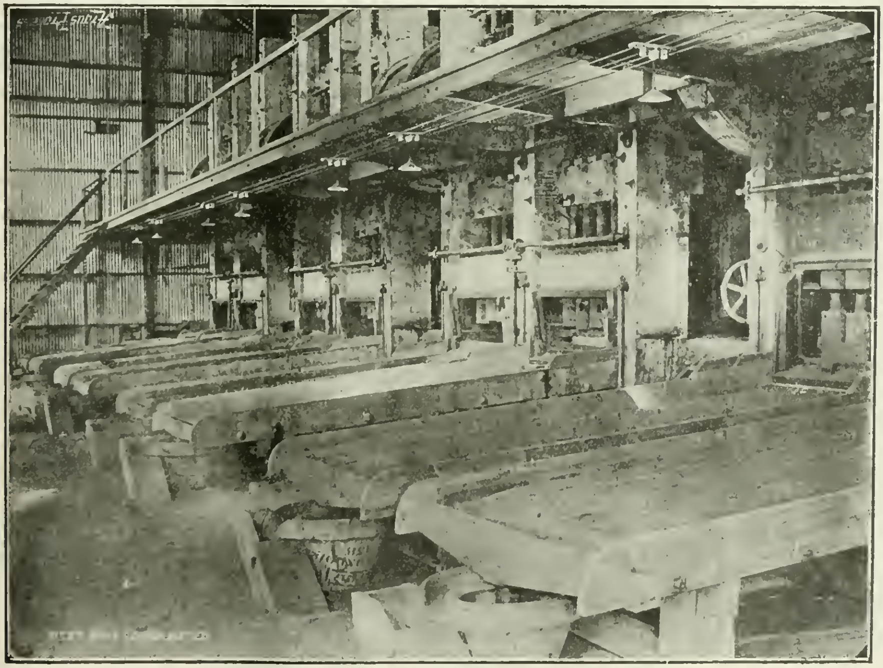
The facts, however, are these, that the British coal strike with its paralysing effect on industry generally, will tend to increase the demand for South African coal and will also probably result in a higher price for gold.

Enquiries are already being made by shipowners who have not recently been buyers of South African coal, for Transvaal and Natal produce, and it is certain that if the strike were to cease immediately the cumulative effect of a shortage of supply from the British pits will be felt for months and is bound to act in the direction of augmenting South Africa's overseas coal trade.

Incidence of the Dollar Exchange.

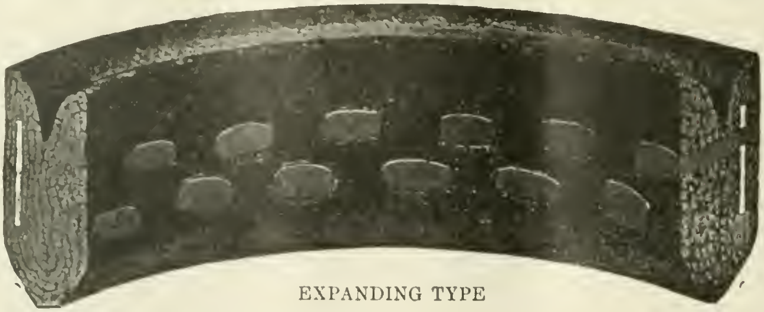
Similarly the present deplorable *impassé* in the United Kingdom will probably influence the gold mines. Coal is the key industry of the world, and the stoppage of supply in Great Britain will mean a partial paralysis of British industry, a further depreciation of the value of the pound in terms of dollars, and, since the price of gold seems to move in direct ratio to the incidence of the American exchange, an advance in the price of the selling product of our gold mines. This, at any rate, is our interpretation of the bearing of the present situation in the United Kingdom upon our own local affairs.

WILL THE PRESENT SITUATION IN ENGLAND AFFECT THE PRICE OF GOLD?



This pertinent question is debated in the accompanying article. Photograph exhibits the principal source of the world's gold supply—a Rand reduction plant.

— This —



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Even without those studs "Lion" is as good as any other packing. Made of the finest materials we can procure, it is acted upon AUTOMATICALLY — gives *always* a tight surface. But *with* those studs, "Lion" is *better than any other made.*

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Barberton Redivivus.

AN APPRECIATION OF A GRAND OLD MINING DISTRICT—MINES WHICH HAVE SPOILED THEIR OWNERS—AND OWNERS WHO HAVE SPOILED THE MINES—BARBERTON'S GOLD OUTPUT TO DATE NEARLY EIGHT MILLIONS—THE PRE-EMINENCE OF THE SHEBA.

In the following interesting article a special correspondent—an old Barberton mining man—writes of the achievements and promise of these once busy Eastern Transvaal gold fields. He points out that Barberton's gold output to date has been worth close on eight millions sterling, and he strongly inclines to the view that there are still good things to be found in the region of De Kaap, Joe's Luck and the various other propositions which have made history in the Transvaal.

Barberton was one of the earliest gold producing districts of the Transvaal. It has had a somewhat chequered history. In perhaps a few instances its mines have let down their owners, but in the great majority of cases it has been the prospector and mine owner who have let down the mine and the district. The discovery of the Rand was a heavy blow to Barberton, but many a present-day magnate—made by the Rand—has good reason to bless the experience in reefs and finance acquired in Barberton.

The Trial Crushing.

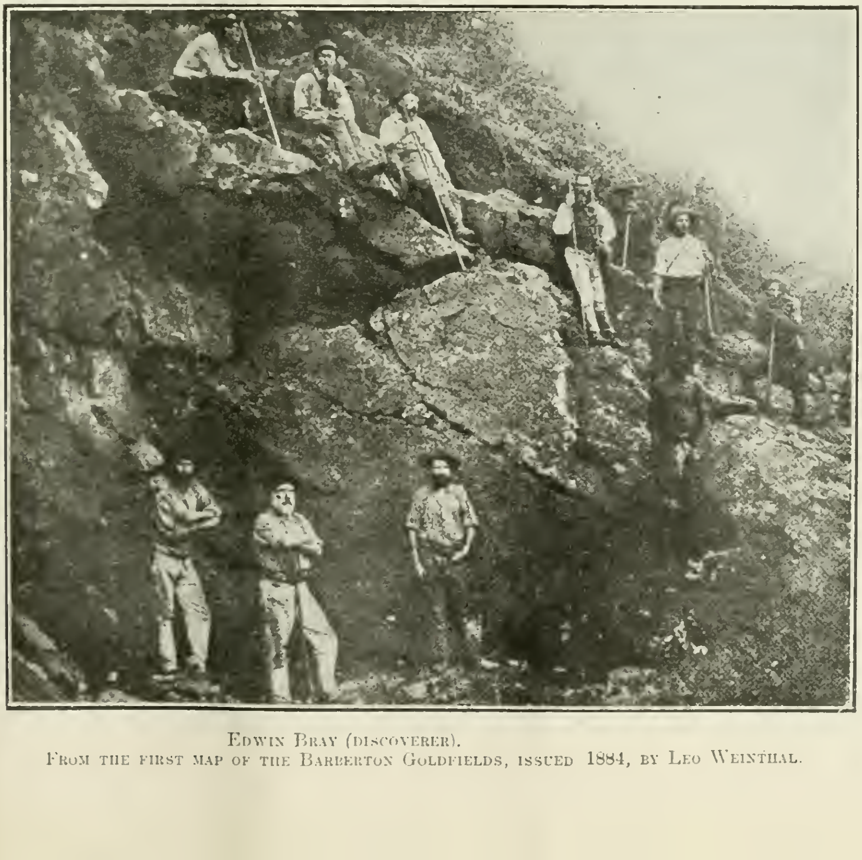
That it was the owners who spoiled the reputation of many a mine can be proved in ever so many cases. Take the old bluff of "Trial Crushing." The gold is mostly in rich chutes. Generally it is easy to get a fair number of tons from the middle of the chute which will mill ounces, though the average of the chute will only be a modest 7 dwts. to 10 dwts. In each case the trial would consist of from 30 to 100 tons. Bad roads, rains, or some other trouble would prevent a larger tonnage being put through. Some of the "old hands"—now fast disappearing—could give you off pat what the "trial crushing" from twenty different mines went.

Over-capitalization and watering of stock also accounted for many unsatisfactory flotations. Then there was the confounded optimism which seems to permeate all mining men in a new field. They get a little bit developed, pannings—usually over-estimated—show high values (low values and blanks are neglected), a few friends talking it up, and the owner begins to lose sleep counting up the millions of gold to be won in the near future. Those who have been prospecting or even punting on the exchange know all about this.

Barberton has suffered unduly from such things as these, but when the effect of this is overcome the district will yet come into its own. In the past it has been no mean producer.

THE DISCOVERY OF THE SHEBA REEF AT BARBERTON IN 1884.

Angus Hay. Geo. Rowe. Thaine Allen. Andrew Osche. Lionel Phillips.



Edwin Bray (discoverer).
From the first map of the Barberton Goldfields, issued 1884, by Leo Weinthal.

A Total Output of Nearly Eight Millions.

From 1885 till 1916 the total output of gold from the district has been 1,818,300 ounces, value approximately £7,700,000. To anyone contemplating visiting or taking an interest in the district, I would say, first get A. L. Hall's excellent Memoir of the geology of the district. He will find it there stated that ever so much of the old work in prospecting was done on narrow preconceived ideas and that much of this work will require to be gone over again. There are a few nice quartz reefs in Barberton which answer to proper definition of reefs but I think I am right in saying nine-tenths of the whole of the gold won in the district has come from occurrences which cannot be properly classed as reefs.

Hall's Geology.

Hall calls them " impregnation reefs " and says " they often do not differ essentially in appearance from the country rock." I can bear this out, as many a time in mining only constant panning was the guide as to what was gold carrying or not. Also let the newcomer beware of trusting the pan too much. I know material of this kind which will pan almost blank and yet assay 30 dwts. per ton. In this case, however, a heavy deposit of black iron in the pan gave an indication that values were to be expected.

To be of use a prospector in Barberton has to get rid of all preconceived ideas, has to keep an open mind and examine everything ever so slightly from the normal. Above all he must not think entirely of gold. There have been some notable discoveries recently in base metals. Also he must never take for granted that because another man has prospected a district that all is known about it or that because a mine was a failure there is no use examining it again.

There is a mine quite near the town of Barberton. It was discovered and worked in the early days. It had many resurrections and at least three tributing syndicates or individuals had a try at it. Then along came some Rand people and tackled it in earnest. It was a private concern, so one cannot mention the rumours of what profits were made, but they are all wealthy men now.

Another mine was tried in the early days but thought to be no good. Two men, natives of Southern Europe, took it up and erected a 5-stamp mill. The reef was quartz and they averaged a few (a very few) dwts. They had to close down, and the property was put up for sale by auction. A mining man who had spent his life mining in Barberton had it examined. With more acumen than others he had the *walls* of the reef assayed. Probably he had in mind Hall's advice. The walls of the reef, bare country rock to look at, carried as many ounces per ton as the reef had carried dwts.! He bought the whole outfit, mill and claims, for £900 or £1,000 and has " carted " in gold ever since.

Barberton is not all failures, not by a long way, but the old adage, " Far away birds have always fine feathers," holds good here. Some time ago I showed an assay plan to a financier in Johannesburg. The reply was: " Now, if that mine had only been in Rhodesia I could have got £10,000 in a day for it, but for Barberton——! "

Lines of Reef Outcrop.

Whilst no reef in Barberton can be followed and identified for any great length, there are belts of mineralized country which can be traced for very long distances.

One of the most persistent is what is known as the Oratava line. If you take a map of Barberton and draw on it a straight line from Wilson's Kop near Komati Poort to Barberton or beyond, passing, say, one mile behind Barberton, it is no great stretch to say that within one mile on either side of that line gold will be found over its whole length. The distance mentioned is about sixty miles.

Sheba is another persistent area, but Sheba is rather a centre than a line, as reefs—so-called—and gold are found all round it. There has been extra pressure and contortion of the strata in this locality with corresponding extra mineralization.

The Consort line is another line much favoured by prospectors, and there are a number of other lines on which have been found mines giving good values.

The Queen of the District.

In the Barberton district the Sheba Mine dominates everything both in the totals of gold produced and value per ton of ore. In an old report I have seen the returns are given for *six months'* crushing as *seven ounces* per ton over the plates. The old quarry was worked out. Then Zwartkoppies was found. Zwartkoppies became worked out, and the fissure enrichments in the Zwartkoppies bar gave another lease of life. At present development work is being pushed ahead and any day another Zwartkoppies may be discovered.

There are numerous blocks of claims pegged and held all round Sheba. Many of these contain chutes of gold and will be worked in the future. Victory Hill is, we hear, again being opened up.

Two miles from Sheba Station and the same from Sheba Mine is the Bonanza, which was developed by the Pullingers in the early days. There is a large tonnage of very high grade ore developed in this mine.

In the Noord Kaap district the Maid of De Kaap and the Consort continue to send in their monthly " bricks." I hear the usual term bars hardly fits their case. I also hear that the Maid of the Mist, owned by the same people as the Maid of De Kaap, is showing up well in development.

A Present-day Dividend Payer.

The Barbrook, near the old French Bobs at Louw's Creek, has recently paid a 30 per cent. dividend and ore reserves are nine years ahead of the mill. But why enumerate more mines? In an old list lying beside me there are over *two hundred* mines named. What a list! And remember these were not wild peggings. They are not extensions of known mines, and strictly speaking not on any one line, but all on one or other of the mineralized lines previously mentioned.

I have examined many of them and in every one you were sure to find some rich chute or pocket or even panning to justify its being pegged and named.

Some of these claims have been worked, some are held, and the locality of some even forgotten except perhaps by one or two of the older hands.

I can remember being sent to examine the Maid of the Mist Mine about twenty years ago. An " old hand " in Barberton could only guide me by an old road closely overgrown with bush to within a mile of where the mine was supposed to be. We slept out, and it took another half day to find the mine!

Base Metals and Minerals.

In the past very little has been done to develop any of the base metals of the district. Some occurrences were known, but generally the old prospector took no interest in anything but gold. Magnesite is worked at present at three places miles apart, and other deposits are known or held. Talc has been produced for years, and there are large deposits of this mineral and only the market limits its output. The quality in many cases is of the very best, and once freights and overseas prices become normal there will be big openings for work on this mineral.

Asbestos is another mineral which has been known in the district for many years, but—the old story—being in Barberton it could not be good, and although known and often examined money was never forthcoming to prove the deposits. Recently a deposit of this mineral on Joubertsdal has been tackled in earnest and good reports are expected daily. Many more deposits are known, but generally speaking want of captial hinders development.

Within the past year there has been a notable discovery of high grade nickel ore. This is perhaps as good an illustration as can be given as to the possibilities of the district. The discovery is on a hill whereon there are some cuttings for gold reefs. On the same line gold has been found, and within a few hundred yards of the same company's talc deposit a shaft has been sunk on a gold bearing "reef." I think it is on the talc claims. No doubt many of the old prospectors saw the nickel ore—probably panned it for gold—but failed to identify it, or to realise that it had a value.

Climate.

People who have not visited the low veld have little conception of the ideal climate and the beauty of the scenery in that district. In the old days there was certainly a lot of fever and many deaths, principally due to lack of knowledge of how to take precautions and how to treat malaria when contracted. There is still a certain amount of malaria in the valleys, but mosquito-proof houses have minimised the risk. At one time no one would think of living in any of the valley, now, every valley has its citrus orchards and its farmhouses. In the hills where most of the mines are situated it is as healthy as the high veld.

Another great point in Barberton's favour from a mining point of view is the facilities for cheap working. The mines are generally on the hills or hillsides, and adit working is the common method of mining, thus cutting out the expense of hoisting. In many instances there is sufficient water power; there is plenty of bush for timbering and charcoal making. There is always a sufficiency of cheap labour. Being supplied with railway and near the port, shares are cheap. The so-called reefs are often soft bodies of schist, and little blasting is needed. I can personally vouch for cases where profits were made on 2½ dwt. ore.

To the man who intends going to Barberton to mine I would give him this advice: Go with an open mind, be prepared to personally supervise everything; above all, keep the pan and assay furnace going; and do not be discouraged and run away if you get blanks for days. It's almost as big a gamble as diamond digging, but the "next blast" may disclose another Zwartkoppies.

B.G.D.

Khosis Asbestos Company (1920) Limited.

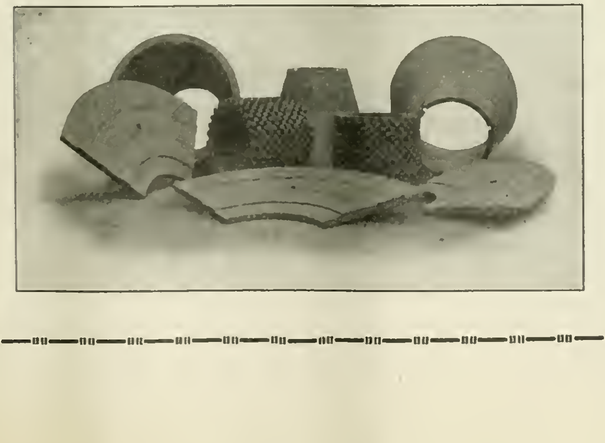
PROGRESS OF DEVELOPMENT—A SATISFACTORY STATEMENT.

The final meeting of the Khosis Asbestos Co., Ltd., whose assets had been taken over by the Khosis Asbestos Company (1920), Ltd., was held on the 29th March, 1921, when the liquidator's report and accounts were adopted. At the close of the meeting Mr. L. Charlston Goch, the Chairman of the new Company, informed shareholders that the Company had acquired all the assets of the Excelsior Asbestos Syndicate, Ltd., on very favourable terms. The chief asset is the lease of the farm "Hopefield Estate," in extent some 7,800 morgen, which has 15 years to run at a moderate rental and royalty. This acquisition, he pointed out, gave the Company control of approximately 23,000 acres of asbestos bearing ground in some of the most favourable parts of the Asbestos Mountain. He gave shareholders a *resumé* of his recent visit to the mine, and the various properties inspected by Mr. Ellis and himself, accompanied by the manager, Mr. A. Hopkin-Jenkins. At the Khosis Mine, a shaft had been sunk on Block A, and workings opened up to a length of 80 feet in excellent quality and length of fibre. These workings were estimated to yield 40 to 50 tons per month regularly. At Block B a shaft had also been sunk and the top layer of fibre was intercepted at a depth of 10 feet. This shaft is being continued to strike the lower layers, and it is expected will in three months' time also yield 40 to 50 tons of fibre monthly. It is then proposed to sink a shaft at Block C of the Khosis property, after which development work will be commenced on the farm "Billinghurst." The Board has decided to close down the present workings at "Hopefield Estate" for the time being, but these will be recommenced as soon as the programme of work at the Khosis Mine has been completed. He also reported that a deputation of native labourers had waited upon him at Khosis and discussed various matters in which he promised to see that their requirements were granted, if on their side they would see that the labour supply was augmented, and the men would be willing to work night shifts. This they did and he had the pleasure of reporting that since then the labour force had been considerably increased and night shifts were arranged for from 1st April. After reporting that 35 tons of fibre was already on the road, valued approximately at £1,350, he gave details of the agreement which secured the sale of the Company's entire output for a period of five years at the best prices, and concluded by saying: "Although shareholders had been invited to what might be described as the burial service of the old company, yet it had emerged phoenix-like from its ashes to renewed and enlarged life, and had a long and prosperous future before it." Several shareholders, including Messrs. M. T. Kell and W. Lyne, spoke with enthusiasm of the vigorous forward policy adopted by the directorate and the management, in whom they expressed their entire confidence.

The next examination for Assayers' certificates of competency will be held on the 26th May at the University College, Johannesburg.

* * * *

It is notified that the next Mine Managers' examination will be on the 18th, 19th and 20th May at the University College.



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Present Position of the Coal Trade.

TEMPORARY BREAKDOWN OF THE DELAGOA COALING PLANT—HOW THE STRIKE IN BRITAIN MAY AFFECT THE POSITION—RAILWAY RATES—A DEPUTATION BUSY AT CAPETOWN.

The present position of the South African coal trade invites special consideration in view of the calamitous state of affairs prevailing in the United Kingdom which may well have as a consequence renewed deflection of shipping to South African ports for coal. At the moment the coal trade is somewhat slack and the position in the Transvaal fields has been rendered unsatisfactory by reason of a breakdown of the coaling plant at Delagoa Bay. The question of railway rates on coal continues to receive much attention and in the accompanying article this important aspect of our coal trade is dealt with at length.

Coal mining in the Witbank-Middelburg fields is at present suffering from the prevailing depression. Trucks have lately been more plentiful, native labour complements are adequate and most of the pits are now equipped for a considerably larger output than hitherto. Of recent months, however, the demand at Delagoa Bay has fallen off materially. Within the past few days, too, the position has been aggravated by the breakdown of the coaling installation at Lourenco Marques.

Coal-Owners' Deputation at Capetown.

A further unsatisfactory factor is the enhanced rates for coal traffic charged by the Railways and in regard to this matter it is interesting to learn that a deputation from the Transvaal Coal-Owners' Association, consisting of Messrs. John Roy, S. C. Black, Gordon Sandilands and H. G. L. Panchaud, has been visiting Capetown with a view to securing from the Government a more satisfactory working agreement.

The Railway Explains.

The Government's view of the subject of railway rates is well expressed in Bulletin No. 18, which has just been issued by Sir Wm. Hoy. Having stated that the traffic statistics published in the Bulletin for the three months ended December 31st last showed substantial increases, but that those for the three months ended March would fall considerably short of the figures for the quarter ended December, Sir William remarks that coal traffic continues to show a falling-off and there has been a further decline in general merchandise. The falling-off in coal orders came with unexpected suddenness, owing to the complete reversal of conditions oversea. The price of coal in Europe dropped very suddenly, and concurrently with a big drop in sea freights. In December Europe was buying coal from South Africa, while in January, owing to the sudden drop in prices and freights, Europe was in a position to undercut South African prices in competitive markets, and also to ship coal under exceptional conditions to South Africa. In December there was an unprecedented boom in the South African coal trade. The tonnage shipped reached record proportions, and though the outlook in January was far from favourable, the orders which had already been booked for that month resulted in the record figures of December being considerably improved upon and in an increased tonnage of 139,000 being shipped compared with the corresponding month of the previous year.

S.A. Export Trade.

Dealing with shipment coal rates the General Manager states that early in the year, the Administration ascertained that the prices of coal for ships' bunkers and export were falling in Europe and America, and also that ocean freights for coal were declining substantially. The price of Welsh coal fell by about £3 per ton, and freights from Cardiff to the Red Sea dropped as low as 12s. 6d. per ton. These factors changed the entire aspect of the export coal trade, and demonstrated the necessity for a substantial reduction in the price of South African coal for ships' bunkers and export. Deputations from the Natal and Transvaal colliery interests were invited to meet the Administration in order to discuss the situation and the measures to be taken to safeguard South African interests. At the meetings which ensued the colliery interests urged that South African bunker coal should be reduced in price by at least 20s. per long ton, of which they suggested 15s. should be borne by the railway rates, and 5s. by the collieries in reduced pithead prices. In support of this attitude the collieries pointed out that railway rates on coal had been increased in greater ratio than pithead prices since pre-War days, which was quite true. The attitude of the Administration was that no increase of railway rates had been made since July, 1920, whereas the collieries had increased their pithead prices as recently as January 1 last by 10s. per ton in Natal and 7s. per ton in the Transvaal. In view of the changed position and keen competition in the coal trade, it was held by the Administration that these increases were ill-advised and should be withdrawn. The Administration also urged that it was difficult to justify reducing railway rates, with a consequent heavy loss of public revenue, almost concurrently with large increases in pithead prices by the collieries, especially as the railways were already working at a loss.

Alterations in Rates.

The Transvaal collieries agreed to reduce their prices by 5s. per ton, but the Natal collieries took no action in this direction. Finally, the Administration decided, with effect from February 7, to make the following alteration in railway rates: (a) Rates for bunker coal reduced by 6s. 8d. per short ton (2,000 lb.); (b) rates for bunkers for ships taking full cargoes of export coal reduced by 8s. per 2,000 lb.; (c) rates for export cargo coal to Mauritius, Madagascar, Reunion and destinations outside the Red Sea and Indian Ocean reduced by 8s. per 2,000 lb.; (d) rates for export cargo coal to destinations within the Red Sea and Indian Ocean increased by 2s. per 2,000 lb. Note.—The rates were extremely low, and after the recent increase of 2s. per 2,000 lb. only amount to 9s. 3d. per 2,000 lb. from Witbank to Lourenco Marques, equal to .40d. per ton per mile. In announcing these reductions to the colliery interests it was intimated that they were conditional upon the collieries abandoning the increased prices introduced on January 1 last; but although the collieries made reductions of 5s. per ton in the Transvaal and 5s. 6d. per ton in Natal, they are, Sir William points out, still charging pithead prices higher than those in force in December last by 2s. per ton in the Transvaal and 4s. 6d. per ton in Natal.

Coal and Pre-War Price.

The position of the coal trade becoming even more acute, the Administration decided, with effect from March 14, to apply the reduced rates introduced on February 7 unconditionally, and also to make a further reduction in the rates for bunker coal of 2s. 3d. per 2,000 lb. The reductions in bunker coal rates introduced on February 7 and March 14 aggregate 8s. 11d. per 2,000 lb., equal to approximately 10s. per 2,240 lb. The net result to date, therefore, is that while the Railway Administration is now charging rates for bunker coal 10s. per 2,240 lb. lower than those operating in December last, the Natal collieries are charging pithead prices 4s 6d per 2,240 lb. higher than in December last, and the Transvaal collieries 2s 3d per 2,240 lb. higher. The present Natal pithead price is 24s. 3d. per long ton, or 135 per cent. in excess of the pre-War price. The Transvaal collieries are charging 12s. 6d. per 2,000 lb., more than double the pre-War price. While there is no objection to the collieries obtaining as much as they can for their coal, Sir William asserts, it is difficult to justify the colliery interests receiving higher prices than they did in December last, and at the same time clamouring for reductions in railway rates, seeing that the railways are charging 10s. per long ton less than in December last. It is necessary, in justice to the Railway Administration, that the facts should be made known as the impression seems to have been created that high railway rates are the primary cause of the high prices of South African coal at the ports which are endangering the retention of this important trade.

Ill-Timed Increases.

It is also necessary to point out that the last increase in railway rates for shipment coal was made eight months ago—i.e., on July 12, 1920—at a time when the trade was booming, and when quantity rather than price was the determining factor, whereas on January 1, 1921, when the colliery prices were heavily increased, the prices of Welsh and other competitive coals were already declining rapidly. The South African increases were, therefore, particularly ill-timed. That the increases in railway rates did not prejudice trade will be obvious from an examination of the records showing the development and the establishment of the coal business in recent years. The average tonnage shipped per month for certain periods was as follows:—In 1915, before the first increase in railway rates, average per month, 162,867 tons; for the two years ended March, 1920, 205,000 tons; for the three months ended December, 1920, 315,000 tons; December, 1920 (highest on record), 332,000 tons. The recent reductions in rates on bunker and export coal have involved a surrender of over one million pounds sterling per annum, says Sir William, and it is felt that the colliery interests should respond to the efforts of the Administration by at least abandoning the increased prices introduced from January 1. The reductions made by the Administration mean adding to an already considerable deficit, while the reductions which it is suggested should be made by the collieries merely involve reducing their profits in the interests of future trade.

KNIGHTS DEEP.

Portions of the company's assets have (we are officially informed) already been satisfactorily disposed of, and the liquidators are now about to conclude arrangements for sale of the bulk of the remaining plant, machinery and buildings to a local syndicate for £70,000. The purchase price is covered by cash and bank guarantees. Arrangements provide, *inter alia*, for continuation by Knights Deep of its operations for the recovery of gold, with the free use of plant required for that purpose and for the reservation to the company of the use of the Lohse shaft and plant for a period.

South-West Diamonds (1920), Ltd.

The Secretaries report that the output for the month of March, 1921, is 409 carats. The Auditors are now examining the accounts, and it is hoped to have the Directors' reports and accounts ready for shareholders by the beginning of May next.

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Minerals in South-West Africa.

PRESENT POSITION OF THE INDUSTRY—HOW THE SLUMP IN DIAMONDS AND TIN HAS AFFECTED THE TERRITORY—THE BIG HOUSES AND THE ERONGO CASSITERITE AREAS.

A few months ago there were indications of a "move" in the direction of the base metal areas (and particularly cassiterite) of the South-West African Protectorate by the big houses of the Rand. The heavy fall in the price of this metal and the severe slump in diamonds have, however, materially affected the outlook for the mineral industry in the mandatory State. In this article the position of metal mining in the territory is briefly discussed.

The recent collapse in the diamond market and the severe slump in the prices of metals have seriously affected mining enterprises and prospecting activity in the South-West African Protectorate. The diamond debacle has, moreover, greatly reduced the revenue of the whole country and the situation created thereby is a most difficult one.

Reported Discoveries.

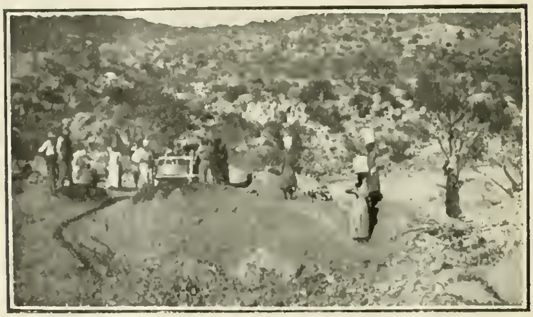
Rumours of the discovery of tantalite and other rare metals in South-West Africa are current, but there seems to be little disposition to take mineral ventures seriously during the prevailing depression. One hears it stated that a number of mining engineers and geologists from the Union, who have established themselves in Windhuk and elsewhere since General Botha's conquest of the country, are preparing to leave the territory.

The Big Interests.

And rumours, too, are current to the effect that recent expert investigation of certain base metal claims acquired by a leading Rand Corporation has resulted in a scarcely satisfactory report being forwarded to headquarters in Johannesburg. On the other hand, it is interesting to learn that a leading house has pegged a number of cassiterite bearing claims on both the east and west flanks of Pankwob Mountain. The Ameib cassiterite property has been sold to a London syndicate, and a good deal of quiet interest continues to be taken in the Erongo Tin Fields generally.

Heavy Rains.

Since the visit of a special commissioner of this journal to the South-West African cassiterite areas three months ago exceptional rains have fallen in the territory and the parched dry lands around Karibib are now a wealth of vegetation, rich green grasses and acres of wild veld flowers. Rains have transformed the whole face of the country. This is good news. Revenue for the administration of the country will have to be obtained from somewhere and if the mineral industry is unable to supply the necessary funds it will be necessary for agriculture to contribute a larger share towards the territory's necessary expenses.



Washing Alluvial Tinstone in South-West Africa.

German Trade Activity in India.

The present rate of exchange allows the German exporter to undersell the British and Japanese article, with the consequence that the Indian importer is buying largely, and thus Germany is regaining the hold o nthe Indian market, occupied by them prior to the War.

THE GREATEST VALUE IN MINING.

Southern Van Ryn.

£50 SIX-YEAR NOTES AND THE SHARES AT PRESENT PRICES.

The notes may be paid for at once in cash or in four quarterly instalments of £13 15s. each. The notes carry 10 per cent. current yearly interest, payable on the 1st of May in each year, and £50 deferred interest, payable on the 1st May, 1927, that is at the end of the six-year period of the notes. The £50 principal of the note is also payable on the 1st May, 1927. The notes therefore return £30 in current yearly interest, £50 deferred interest, and the principal of £50, or £130 in all. Before the end of the sixth year it is expected that the Company's yearly profits will more than cover the final payments on these notes (see Prospectus). With the great assets the Company possesses, free of debt and unencumbered, which includes **2,140 Claims on the Far East Rand with no Government share of profits to pay,** it will be seen that these notes are an exceptionally safe investment with great earning power.

Make good your losses on other stocks by getting in now, and share in the rise which is surely coming. Remember, the Van Ryn Reef has never failed to show rich development: to-day on the Southern Van Ryn it is 8 dwts.; to-morrow it may be 12 dwts., and you will see the wisdom of these words.

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Consolidated Mines of South-West Africa.

FIRST ANNUAL REPORT—EFFECTS OF THE DIAMOND SLUMP—DIVIDEND "PASSED FOR THE PRESENT."

The first report of the Consolidated Diamond Mines of South-West Africa has been awaited with a great deal of interest. It has now been issued. The total share capital is £4,500,000, of which the total issued is £2,633,600, while the debenture issue of £1,850,000 has been completed.

Referring to the quota of 21 per cent. allotted to the S.-W. Protectorate, the directors state that as a result of representations this was increased by an amount of £200,000. The Board, however, still considers that the quota is inadequate, "Owing to the consolidation of the various fields which were formerly held by the Vender Companies it is obvious that considerable economies in working costs could be affected if the Fields were worked as one unit. The Administrator and his advisers fully recognise the need for obtaining the full benefit which should result from the consolidation, but the obstacle thereto consists in the fact that varying scales of Royalties and of profit-sharing arrangements are in existence and prevent unified working. Negotiations have taken place between the Board and the Administration with a view to removing these obstacles, and it is believed that an arrangement satisfactory to both the Company and the Administration will eventually be arrived at."

Finance and Production.

Prices increased considerably during the period, as will be seen from the following figures relative to the basic price of Protectorate Diamonds.

Basic Price Protectorate Diamonds.

		£	s.	d.	
First quarter, 1920 ...	...	£5	12	4	per carat
Second quarter, 1920	...	7	4	7	per carat
Third quarter, 1920 ...	...	8	4	4	per carat
Fourth quarter, 1920	...	8	9	5	per carat

In May last, however, the demand for stones began to weaken and the sales by the Syndicate fell considerably in volume. The contraction of the market still continues. Owing to the falling off in sales the normal quota of the Company which is £630,000 per quarter, fell to £540,330 for the quarter July-September, and to £275,583 for the last quarter of 1920. These figures give a clear idea as to how the depression in the market has affected the Company's sales. Although the demand has shrunk prices have, as shown above, considerably increased.

The Directors emphasise the soundness of the policy which has guided the principal producers in the Union and all the producers in the Protectorate, namely, that the regulation and control of the output particularly the marketing of the output are vitally essential to the industry. In the Protectorate all producers are required by law to deliver their entire production to a central authority, which is charged with the duty of selling or arranging for the sale of the diamonds. There can be no doubt, says the report, that it would in the general interest of the whole industry if a similar law existed in the Union

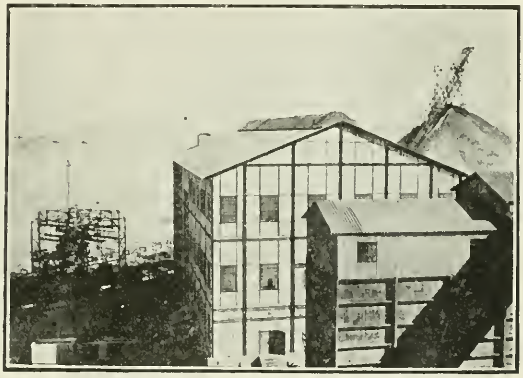
With regard to the profit position the Board has been advised that technically the profits made for account of the Company between the 1st October, 1919, and the 15th February, 1920, the date of the adoption of the Sales Agreement, and amounting to £128,365 14s. 2d., may not be treated as profits for the purpose of a dividend but must be regarded as capital. An additional factor which must also be borne in mind is that the Debenture Interest and Debenture Redemption for 1920, amounting to £270,653 12s. 8d., has been paid for out of profits. By the conditions of the Debenture Trust Deed all amounts contributed by the Company towards Debenture Redemption will be refunded to the Company and treated as profits if and when the Debentures are converted into Shares.

The real profit position, therefore, is:—

	£	s.	d.
(a) The amount reflected in the accounts	£219,973	2	9
Note.—The value placed on the unsold stock of carats of diamonds on hand at 31st December, 1920, is the actual cost of production *less* 70 per cent. borne by the Government. The value of such diamonds taken on the present sale prices is about £2,114,720, of which your Company's share, after allowing for taxation, would be approximately £719,005.			
(b) The profits made between the 1st October, 1919, and the 15th February, 1920	128,365	14	2
(c) The amoants paid out of profits for Debenture Interest and Debenture Redemption	270,563	12	8
Total	£648,902	9	7

Dividend Passed.

The Board would have recommended the payment of a dividend had the market conditions remained normal, but regard being had to the facts that the depression still continues that the outlook remains obscure, and that the Government has decided to discontinue the system of advances, the Directors are of opinion that the wise course is to conserve the Company's cash resources and to pass a dividend for the present.



A Scene at the Kolmanskop Diamond Mines.

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Up-to-date Tuition.

MANAGER'S CERTIFICATE (METALLIFEROUS). We secured **15** Passes from **19** Entries in two recent examinations, and in the last (Jan. 1921) examination secured 7 passes from 8 entries. **Another percentage record !**

MANAGER'S CERTIFICATE (COAL).—New Class recently started. Candidates being enrolled.

MINE SURVEYORS' CERTIFICATES.—We have secured **55 Certificates** to date, and lead with passes by more than **10 to 1.**

OVERSEER'S CERTIFICATE.—We lead with passes, 1918 and 1919. **21** Certificates secured during 1920. Overseers' Class (Coal) recently started.

PRELIMINARY SURVEY.—We have trained the majority of the Assistant Surveyors working in the Mines.

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Annual Reports: An Important Batch.

RESULTS SECURED BY SEVERAL CORNER HOUSE CONCERNS DURING 1920—COMPARATIVE FIGURES —POINTS FROM CONSULTING ENGINEERS' REPORTS.

The annual reports of a number of companies under the Control of the Central Mining/Rand Mines group are now to hand, and we give hereunder a comparative tive statement of results secured during recent years, and also an abstract of the reports of the consulting engineers of these subsidiary companies.

COMPARATIVE RESULTS.

City Deep.—Tons milled: 1918, 670,100; 1919, 617,800; 1920, 862,500. Working costs per ton: 1918, 24s. 8d.; 1919, 27s. 9d.; 1920, 30s. 2d. Yield per ton, dwts.: 1918, 9·1; 1919, 9·1; 1920, 8·1. Revenue per ton: 1918, 38s.; 1919, 42s. 7d.; 1920, 45s. 3d. Profit per ton: 1918, 13s. 4d.; 1919, 14s. 10d.; 1920, 15s. 1d. Total profit, 1918, £447,294; 1919, £457,687; 1920, £649,348. Development footage: 1918, 18,780; 1919, 17,267; 1920, 15,651. Ore reserves, tonnage 1918, 3,342,700; 1919, 3,418,050; 1920, 3,099,200. Average value of ore reserves, dwts.: 1918, 9·6; 1919, 9·4; 1920, 9·0. Average strength of coloured labour force: 1918, 4,982; 1919, 4,465; 1920, 7,011.

Durban Roodepoort Deep.—Tons milled: 1919, 263,100; 1920, 277,200. Yield per ton milled, dwts.: 1919, 6·658; 1920, 6·412. Revenue per ton milled. 1919, 30s. 9d.; 1920, 35s. 5d. Working costs per ton milled: 1919, 31s. 11d.; 1920, 34s. 5d. Profit or loss per ton milled: 1919, loss 1s. 2d.; 1920, profit 1s.. Total working profit or loss: 1919, loss £15,049; 1920, profit £13,682.

Geldenhuis Deep.—Tons milled: 1918 591,100; 1919, 560,100; 1920, 557,500. Working costs per ton: 1918, 23s. 1·5d.; 1919, 24s.; 1920, 27s. 11d. Yield per ton, dwts.: 1918, 5·6; 1919, 5·6; 1920, 5·6. Revenue per ton: 1918, 23s. 2d.; 1919, 25s. 11d.; 1920, 30s. 11d. Profit per ton: 1918, 0·5d.; 1919, 1s. 11d.; 1920, 3s. Total profit: 1918, £1,208; 1919, £55,402; 1920, £84,891. Development footage: 1918, 11,520; 1919, 4,735; 1920, 6 317. Ore reserve, tonnage; 1918, 1,549,600; 1919, 1,375,200; 1920, 1,467,100. Average value of ore reserve, dwts.: 1918, 5·9; 1919, 5·9; 1920, 6·1. Average strength of coloured labour force: 1918, 1,146; 1919, 3,981; 1920, 4,177.

Knight Central.—Tons milled: 1918, 282,250; 1919, 252,100; 1920, 295,000. Working costs per ton: 1918, 23s. 7d.; 1919, 28s. 7d.; 1920, 27s. 3d. Yield per ton, dwts.: 1918, 5·9; 1919, 6·4; 1920, 5·8. Revenue per ton: 1918, 24s. 8d.; 1919, 29s. 11d.; 1920, 31s. 11d. Profit per ton: 1918, 1s. 1d.; 1919, 1s. 4d.; 1920, 4s. 8d. Total profit: 1918, £15,640; 1919, 17,140; 1920, £68,600. Development footage: 1918, 5,011; 1919, 2,336; 1920, 2,050. Ore reserve, tonnage: 1918, 275,000; 1919, 200,300; 1920, 150,700. Ore reserve value, dwts.: 1918, 6·9; 1919, 6·8; 1920, 6·1. Coloured labour strength, average: 1918, 2,108; 1919, 2,068; 1920, 2,222.

Robinson.—Tons milled: 1919, 471,400; 1920, 475,200. Yield per ton milled, dwts.: 1919, 5·013; 1920, 4·361. Revenue per ton milled: 1919, 23s. 7d.; 1920, 24s. 2d. Working costs per ton milled: 1919, 20s. 4d.; 1920, 20s. 6d. Profit per ton milled: 1919, 3s. 3d.; 1920. 3s. 8d. Total working profit: 1919, £76,062; 1920, £86,203.

Rose Deep.—Tons milled: 1918, 616,900; 1919, 604,900; 1920, 643,600. Working costs per ton: 1918, 18s. 6d.; 1919, 19s. 2d.; 1920, 21s. 2d. Yield per ton, dwts.: 1918, 5·5; 1919, 5·5; 1920, 5·1. Revenue per ton: 1918, 23s.; 1919, 25s. 9d.; 1920, 28s. Profit per ton: 1918, 4s. 6d.; 1919, 6s. 7d.; 1920, 6s. 10d. Total profit: 1918, £139,813; 1919, £198,149; 1920, £221,018. Development footage: 1918, 5,112; 1919, 5,214, 1920, 7,050. Ore reserve, tonnage: 1918, 2,909,520; 1919, 3,031,280; 1920, 3,060,040. Ore reserve, value dwts.: 1918, 5·3; 1919, 5·2; 1920, 5·1. Coloured labour strength, average: 1918, 3,405; 1919, 3,262; 1920, 3,646.

POINTS FROM CONSULTING ENGINEER'S REPORTS.

Bantjes Consolidated: Continuing the Drive.

Operations, confined to the extraction of gold from various sources in and around the reduction plant, ceased in July, and resulted in the recovery of 1,077 fine ounces of gold, which realised a net profit of £3,598 1s. 1d. The revenue obtained from the Consolidated Main Reef Mines and Estate, Ltd., from sale of ore was £917 2s., being 12,228 tons at 1s. 6d. per ton; of this tonnage, 10,264 tons came from stoping and the balance from development. The 11th level west drive, which is being driven under agreement with and by the latter company, reached the boundary of the leased area early in the year, and was continued in your company's ground at its own expense. The total distance advanced was 597 feet, of which 300 feet were on reef disclosing 7 inches, assaying 7 dwts. At 31st December, 1920, this drive had been in dyke for 256 feet, and at the time of writing it is still in dyke. In pursuance of the policy sanctioned in November last, the drive will be continued for 500 feet after passing through the dyke. A borehole put up to the South Reef from this drive gave disappointing values.

The Durban Deep: A Mine of Poor Efficiency, but with Good Values in Depth.

City Deep: Increase of £191,661 in Profit.

The year's work has resulted in the very large increase of £191,661 in the profit earned, caused partly by the higher price realised for the gold, averaging approximately 111s. per ounce net, and partly by the greatly increased tonnage milled. It will be observed that this result was obtained in spite of a considerable decline in the average yield and an increase in the working costs per ton.

The gross expenditure has risen from £856,331 in 1919 to £1,301,982 during 1920. This is chiefly due to the additional tonnage, but there was an increase in working costs of 2s. 5d. per ton milled; the principal reasons for this being white wages, which have on the average increased from £35 8s. per man per month in 1919 to £45 6s. in 1920; native wages, which in 1919 averaged £2 19s. 9d. for each month worked, against £3 3s. 7d. in 1920; and, in addition, nearly all items of stores and materials showed an increase in price.

The most important event of the year was the taking over of the City and Suburban mine on 1st May under a provisional agreement, which was subsequently ratified. The principal assets of the City and Suburban Gold Mining and Estate Co., Ltd., were a considerable tonnage of payable ore, the complete surface plant and equipment, dwelling-houses, and particularly a labour supply of about 2,500 natives. The working of the mine as a separate unit was continued for as long as it was found practicable and economical so to do, and steps were then taken to merge it into the City Deep organisation. A large proportion of the City and Suburban natives were transferred to the City Deep, and arrangements were made to hoist the City and Suburban ore through the City Deep mine for treatment at the more efficient plant of the later, with the result that the City and Suburban plant is now closed down and will not be reopened unless the native labour supply increases to a sufficient extent. Concurrently with this, two tube mills have been transferred from the City and Suburban to the City Deep, and other changes are contemplated for increasing the capacity of the latter plant.

The process of absorption was not accomplished without a certain amount of disorganisation and some sacrifice in other directions, perhaps the most important being the neglect of development work. Steps have recently been taken to increase this to the amount necessary for the maintenance of the ore reserve position.

The values disclosed by the year's development have not been up to the high standard that has prevailed during the last few years, although on the whole the results cannot be described as unsatisfactory, the average value of 598,500 tons of payable ore developed being 8·9 dwts.

For the above-mentioned reasons the ore reserve has declined both in tonnage and value, the figures as at 31st December, 1920, being as follows:—Main Reef, 61,300 tons, value 6·5 dwts. per ton; Main Reef Leader, 3,037,900 tons, value 9 dwts. per ton; total, 3,099,200 tons, value 9 dwts. per ton.

Fair progress has been made with the south shaft, which had reached a depth of 2,916 feet at the end of the year, and the main crosscut on the 17th level, which is to intersect the shaft at the transfer station, had advanced 734 feet. The average cost of the shaft to date is £36 per foot.

Since the commencement of milling in 1911 the average recovery has been very nearly 9 dwts. per ton milled. While it has been possible to maintain this high figure without detriment to the ore reserve position, and advisable to do so on account of the adverse conditions that have prevailed during the whole period, it has always been recognised that a somewhat lower grade would in the long run be more in keeping with the capabilities of the mine.

The recent acquisition of native labour from the City and Suburban, and the larger crushing capacity at the company's disposal, will, other things being equal, admit of mining a lower average grade of ore, and at the same time maintain and probably improve upon the profits that have been earned in the past. It is therefore considered advisable to take advantage of present conditions to reduce the rate of yield from 9 dwts. per ton to about 8½ dwts. per ton.

Durban Roodepoort Deep: Poor Efficiency—Good Values in Depth.

The general efficiency of the mine is very poor, and can only be attributed to the local difficulties of mining and the scarcity of more experienced workmen. The Princess Estate Gold Mining Co., adjoining your western boundary, ceased operations during the year, and provision had to be made to deal with their water. This necessitated additional expenditure for the installation of new pumps, and increased the cost of pumping by £800 per month. Full use of the compressor plant has been made; the installation of a new 35-drill compressor during the year somewhat relieved the shortage of labour and enabled an increase of machine stoping. However, the machine efficiency has been very unsatisfactory; the mine is essentially a hand hammer mine.

Shaft Sinking at the City Deep: This Company's Profit for 1920 was nearly £200,000 in excess of the 1919 Earning.

Development operations were restricted owing to a shortage of working faces. The payable tonnage developed for the year was 196,200 tons of 7·4 dwts. value. Provided the labour is forthcoming, the mine is now in a position to materially increase the amount of development for the current year. The values in depth are on the whole satisfactory, and the percentage of payability is good at 79 per cent. The ore reserves, recalculated at 31st December, 1920, are as follows:—Main Reef, 520,100 tons, value 6 dwts.; South Reef, 574,800 tons, value 7 dwts.; total, 1,094,900 tons, value 6·6 dwts. Included in the reserve are 176,600 tons required for safety pillars, and temporarily unavailable for stoping. As compared with last year the reserve is higher by 17,100 tons. The value remains the same, and the stoping width has increased by 1 inch.

New Circular Shaft.—In accordance with instructions, the sinking of the deep level shaft was stopped in June at a depth of 2,272 feet, and capital expenditure on this account is in abeyance.

The future success of this mine can only be attained by a material decrease in the cost of operations. Apart from improved efficiency of workers, no relief can be looked for until the old shafts and inclines can be cut out and replaced with the completion of the new deep shaft, which will at once allow of cheaper handling of ore, men and material and general greater economy through the concentration of work.

The most encouraging feature of the mine is the continuity of good values in depth and the high percentage of payability.

Geldenhuis Deep: A Precarious Future.

The tonnage and gold output were practically identical with that obtained during the previous year, and although working costs increased considerably, this was rather more than made up by the extra price of gold. The causes of the greater expenditure were higher wages and increased cost of nearly all supplies; the extra wages to white employees alone accounted for £42,000 during the year. The ore reserve at the end of the year was as follows:—Main Reef, 528,000 tons, value 5·8 dwts.; Main Reef Leader, 196,400 tons, value 6·1 dwts.; South Reef, 500,800 tons, value 6·6 dwts.; Composite Reef, 241,700 tons, value 5·8 dwts.; total, 1,167,100 tons, value 6·1 dwts. The slight improvement in the average value is due to the inclusion of a smaller proportion of the relatively lower grade eastern section ore, as the reserves in this section are approaching exhaustion.

Negotiations are proceeding for an exchange of ground with the Jupiter G.M. Co., Ltd., and the Simmer and Jack Proprietary Mines, Ltd., which have the object of facilitating the working of the lowest part of the eastern section and maintaining the requisite daily output of ore. The increasing extent of the workings in this section and the robbing of pillars has been followed by extensive caving. This has obliterated the old No. 1 shaft and is showing signs of affecting the pillars at No. 2 incline. Any remedy that could be applied would cost considerably more than the profits that the section is likely to provide, but, as far as one can see, it is probable that the section will be exhausted before the shaft becomes unusable. The development in the western section has been fairly satisfactory in respect of values, but the quantity of payable ore exposed was rather small.

The yield of gold has remained at 5·6 dwts. per ton for the past three years, and no material change in this respect is to be expected. The future, therefore, is precarious in the extreme, and depends chiefly upon the price of gold. During 1920 the cost of production was about 100s. per ounce, and should the net price reach this figure it will be a matter of difficulty to carry on.

Knight Central: The End in Sight.

The net proceeds from the sale of gold, after allowing for realisation charges and exchange, averaged during the year about 110s. per fine ounce, and the great improvement in the profit earned as compared with the previous year was due to this cause. The cost of producing an ounce of fine gold was 93·5s., and at the standard price of gold of 84s. per ounce there would have been a loss on the year's work of about £40,000. The working costs showed a satisfactory improvement of 1s. 4d. per ton, chiefly due to the larger tonnage milled.

Although a considerable footage of development was accomplished, it was largely done for the purpose of facilitating rapid stoping in blocks of ore that were already developed. However, about 120,000 tons of ore of a value of 5·9 dwts. per ton were exposed. The ore reserves have been recalculated as at 31st December, 1920, and stand as follows:—Main Reef, 94,300 tons, value 6·6 dwts.; South Reef, 56,400 tons, value 5·3 dwts.; total, 150,700 tons, value 6.1 dwts.

Nothing has occurred during the year to lead to an alteration of the views regarding the general policy of the mine which were stated in the last annual report. The area south of the Simmer dyke between No. 4 and 5 sub-incline shafts is so uniformly poor that additional expenditure on development in its neighbourhood is almost certain to prove unremunerative, and in the eastern part of the mine further development would necessitate a considerable expenditure on a new incline shaft, as the present shaft is not suitably located or equipped to deal with any large quantity of ore should such be found in this locality. A comprehensive scheme for exploring the large untouched area owned by the company would necessitate a new vertical shaft, costing a large sum of money, far more indeed than the funds at the company's disposal, and it would not be warranted by the prospects.

It is not likely that the mine will survive the end of this year, and the immediate cause of its demise will probably be lack of payable ore rather than the price of gold, although this will also be an important factor.

Robinson: Life of the Mine.

The profit of £86,203 shows an increase of £10,141; due to the improved selling price of gold. The increase in the working costs of only 2d. per ton milled, in spite of the increases in white wages and the increased cost of stores and other items outside the the control of the management, points to careful economies all round; special mention can be made of economies in the use of stores, and general efficiency, whereby large savings have been made.

The ore reserve (Main Reef Leader and South Reef only) on re-estimation at December, 1920, totalled 115,200 tons, a fall of 114,200 tons, compared with last year. No valuation of the remaining tonnage can be made. There is a large quantity of Main Reef remaining in the mine unworked, but on account of its low grade it cannot be included in any estimation of ore reserves; however, from time to time, we are able to work portions showing payable values. There is no development work other than prospecting for payable values in the Main Reef body and to facilitate the reclamation of pillars and ore left in the Leader and South Reef old workings. The remaining life of the mine is difficult to forecast, depending on the price of gold and working costs which cannot be determined. With present costs, any further serious fall in the price of gold will leave little margin for profit.

The Manager and staff have done excellent work under difficult conditions.

Rose Deep: Depending on the Gold Premium.

The profit earned reached the satisfactory figure of £221,018, showing a small improvement compared with that earned during the previous year, due chiefly to the higher price of gold and the greater tonnage milled. Working costs are higher by 2s. per ton on account of increases in the cost of labour and stores. With regard to the former, the wages of all white employees have increased from an average of £32 16s. 0d. to £39 18s. 0d. per month, accounting for about £40,000, and native wages are higher by 1½d. per shift, the extra cost for the year being about £7,000; in addition to this, the cost of nearly all stores and materials has gone up. The average yield has declined by 0·4 dwt., and it does not seem likely that a material improvement on the average yield obtained last year, namely, 5·1 dwts. will take place. It will be noticed that practically the whole of the profit was the result of the price realised for gold ebing above standard, and that the margin between expenditure and revenue at standard price is extremely small.

The ore reserves as at 31st December, 1920, were as follows:—Main Reef, 1,131,340 tons, value 5·4 dwts. per ton; Main Reef Leader, 20,860 tons, value 4·6 dwts. per ton; Main Reef Leader and Bastard, 816,520 tons, value 5 dwts. per ton; South Reef and Main Reef Leader, 214,890 tons, value 5 dwts per ton; South Reef, 876, 430 tons, value 4·9 dwts. per ton; total, 3,060,040 tons, value 5·1 dwts. per ton.

The tonnage is practically the same as last year and there is a small decline in the average volume.

Geduld's Year.

ORE RESERVES INCREASED BY 640,000 TONS—PROFIT IMPROVED BY £70,673.

The report of the consulting engineer for the year ended 31st December, 1920, states:

The working results for the year 1920 show a substantial improvement on the preceding year in the profit realised and in the ore reserve position.

The tonnage milled during the year was 526,700, being an increase of 10,700 tons. The tonnage mined showed an increase of 60,000; but more sorting was done, and in addition to increasing the stock of ore in the mill bins, 12,600 tons of ore were dumped on the surface as an emergency reserve.

The yield of gold per ton of ore milled was 7·1 dwts., compared with 7·12 dwts. last year.

The realised value of gold per ton milled was 38s. 10d., the working cost 24s. 1d., and the working profit 14s. 9d., being increases of 5s. 9d., 3s. 6d. and 2s. 3d. respectively, compared with 1919 figures. These increases are all due to the same root cause, namely, the depreciation in value of paper currency. As far as working costs are concerned, this depreciation has resulted in an increase in the cost-of-living allowances, both to Europeans and natives, and in the higher price of stores.

The total profit from gold was £388,674. The addition of sundry revenue of £17,341 brings the total working profit to £406,015, or £70,673 more than for the preceding year. These figures include an amount of £229,259 received in respect of premium and adjustments on gold, equal to 8s. 8d. per ton milled and 24s. 6d. per fine ounce.

The native labour supply was adequate throughout the year to meet all requirements. The health conditions have been satisfactory. The death-rate among the company's natives was 5·53 per thousand from sickness and 2·62 from accidents.

The quantity of water raised from the mine was 726 million gallons, or 177 million gallons more than in the preceding year. 92 millions of this increase is due to dolomite water encountered in the sinking of No. 7 vertical shaft, where 101 million gallons were pumped during the year. 62 million gallons were tapped from cemented fissures by opening retaining valves in the area east of No. 2 shaft for the purpose of supplying certain neighbouring mines with water during the dry season. The cost of pumping such supply was charged to the companies concerned.

The New Shaft.

No. 7 vertical shaft was sunk 1,198 feet, making the depth at the close of the year 1,452 feet. The surface equipment for sinking purposes was completed early in the year, and immediately thereafter a considerable flow of water was encountered. Sinking was slow until the dolomite was passed through and suitable pumps installed to deal with this water. In the second half of the year good progress was made. This shaft is expected to intersect the reef at a depth of about 2,400 feet. The horizon of the 7th level now being driven from No. 3 shaft incline is at a depth of 2,610 feet.

No. 2 vertical shaft was deepened 117 feet and connection made with the crosscut on the 2nd level. Work in connection with the station and waste rock bin on that level is now in hand.

The total development footage for the year, including vertical shaft sinking, was 18,639 feet, being 59 feet less than in 1919.

The ore reserves as measured and valued at 31st December, 1920, amounted to 3,220,000 tons, having an assay value of 8 dwts. over a stoping width of 61 inches. This is an increase of 640,000 tons and an increase in value of 0·6 dwts., while the width is the same as last year. The improvement in value is due to the excellent development disclosures on the 7th level near No. 7 shaft, where there is a good prospect of opening up further tonnage of high-grade ore.

The development account stands in the books at £189,962, equal to 1s. 2d. per ton of ore developed. 2s. 9d. per ton milled was charged to working costs for development redemption.

The capital expenditure for the year amounted to £131,759, of which £114,725 were spent in connection with No. 7 shaft. Of the remainder, £13,541 were spent underground on shafts and equipment.

The capital expenditure for the year 1921 will again be heavy, and will be mainly in connection with No. 7 shaft sinking and equipment. The installation of the second permanent winding engine is in hand, and the laying of a standard gauge railway line to connect with the existing mine siding system will be undertaken immediately.

The New Shaft at Geduld.

High Wages and Lost Trade.

With the object of enlightening their workmen as to the difficulties of obtaining orders in face of the present high costs of production in British works, the directors of William Foster and Co., Limited, of Lincoln, enclosed in last week's pay envelopes a copy of correspondence that has passed between the firm and an old customer in connection with a recent quotation for machinery for the South American market. The correspondence shows that the firm's quotation, which was based on only 6 per cent. profit, was £14,000, of which £9,000 would have been paid in wages to the men engaged at the Wellington Foundry. The prospective customer complained that the contract price was higher than that quoted by American firms, and objection was taken to the strike clause and proposed date of delivery. In order to comply with the wishes of the prospective customer, the firm intimated its willingness to sacrifice the whole of the profit on the order if the customer would consent to pay half of the overtime rates, which would have added 12 per cent. to the wages bill, in order to obtain earlier delivery. The reply to this offer was that the contract could not be placed on such terms without involving the buyer in an absolutely certain loss. Sir William Tritton, the managing director of the firm, has intimated that he will be pleased to discuss the whole question with representatives of the men.

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Telephone **913.** P.O. Boxes **963** and **4573.**
Cable and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

FAR EAST RAND DEVELOPMENTS.

Recent reef intersections in Far East Rand shafts have scarcely been satisfactory. Last year the Springs deep vertical cut disappointing values and this year the reef intersections in Brakpan No. 4, in the Modder B., and now in West Springs No. 1, have, to say the least of it, not made people madly enthusiastic about reef values in the undeveloped sections of the Rand's great eastern annexe. It is true that one swallow does not make a summer. It is equally true that although one shaft at the New State Areas cut a badly faulted portion the other shaft intersected high grade ore—and we believe that recent development values from this shaft have been remarkably high. But in these days of depression it is perhaps only human nature for the general public to look upon the darker side of things, and there can be no getting away from the facts that the recent intersections as noted in the foregoing shafts, coupled with the Modder East business and the closing down of Daggafontein, have created a feeling of despondency as to the future of the huge auriferous areas of the Far East Rand field, outside of the claims now being exploited by the Modder group, the Van Ryn Deep, Geduld, Springs, and Brakpan.

The optimists, of course, point out that it has been the common experience of all recent Far East Rand gold mines to encounter disappointing values in the earlier phases of their development. They point to the experience of Modder B., for example. They recall the fact that for many months the shafts of the Government Areas thrust out their development tentacles and encountered nothing but disappointing values. They declare that it was many years before even the great New Modder found its proper place amongst the auriferous giants of the world.

And it is a further point to be borne in mind that at the present time whilst numerous shafts are intersecting unprofitable values and drives are piercing bad ground the Van Ryn Deep is accumulating tonnages of good grade ore in the western section of that property—a section which always has been regarded as containing little of value.

Speaking for ourselves, we do not share in the belief that the Far East Rand has no more profitable mines to yield. The southern area is so vast that it can be truly said that development to date has resembled sporadic ink spots on a sheet of blotting paper, and we have no doubt that as drives progress it will be found that there are vast zones of pay ore of which we as yet know next to nothing. And we believe that once finality is reached in regard to the disposal of enemy shareholdings better development values will very likely be encountered.

Notes & News.

A Natal Colliery Amalgamation.

The Natal Navigation and Glencoe collieries are amalgamating. These two well-known colliery propositions have for a long time been associated in the sale of coal and to some extend in directorship.

* * * *

Reported Oil Strike.

It is stated that a borehole 300 ft. from the surface in the Boshof district has touched an unlimited supply of petroleum. Petrol (Shell) is being sold in town at 45s., as against the ordinary price of 46s. 6d. charged by the garages.

* * * *

Enemy Share Holdings.

According to information which has reached us from a reliable source, the proposed deal in enemy share holdings is not likely to be effected. We have reason for believing that the Union Custodian and the British Public Trustee have not been able to arrive at a satisfactory settlement in regard to these shareholdings, and it seems probable that the Union Government will take formal possession of the scrip in exchange for Union bonds.

* * * *

Knights Deep's Assets.

The following letter from the New Consolidated Gold Felds has been communicated to the Press for publication:—

"Portions of the Knights Deep Company's assets have already been satisfactorily disposed of, and the liquidators are now about to conclude arrangements for the sale of the bulk of the remaining plant, machinery and buildings to a local syndicate for £70,000, the purchase price being covered by cash and bank guarantees. Arrangements provide, *inter alia*, for continuation by the Knights Deep of its operations for the recovery of gold, with the free use of the plant required for that purpose, and for the reservation to the company of the use of the Lohse shaft and plant for a period."

Inquiry shows that the sale of the machinery and buildings is the important item of information in the above paragraph. The purchasers are second-hand machinery dealers, and nothing in the way of ordinary mining operations will be attempted, any gold that may be recovered being that which is associated in mining phraseology with the "final clean-up."

Bunker Coal: Rates Reduced.

It is notified that, with effect from Wednesday, April 6, a reduction of 6s. 6d. per 2,000 lbs. will be made in the railway rates for bunker coal to Union ports and Lourenco Marques. This reduction will apply to all coal placed in ships' bunkers on or after the above date. No alteration will be made in the existing net rates for export cargo coal, or for coal used in bunkering ships carrying full cargoes of export coal. The foregoing reduction in the bunker coal rates makes a total reduction of 15s. 5d. per 2,000 lbs. in the rates in force prior to February 7.

* * * *

Frank Smith Diamonds.

The secretaries of the Frank Smith Diamond Estates and Exploration Company, Ltd., write as follows: "The existing option certificates carry the right of conversion into shares of the company of the nominal value of 7s. 6d. each against payment at par in respect of all such shares on which the option may be exercised. This option was originally for a period of three years, and expires on February 28, 1923. It has been suggested by certain shareholders that the period during which this option may be exercised should be extended by a period corresponding with that during which the mine may remain closed down. The directors have considered this suggestion and have agreed to recommend it to shareholders for acceptance. Opportunity will be taken at the holding of the next annual meeting before the end of the current year to ask shareholders, at an extraordinary general meeting to be held on the same day, to give the board power to extend the options in the manner suggested."

* * * *

The Walworth International Company, New York.

The Walworth International Company, of New York, U.S.A., have recently opened an office for South Africa in Trust Buildings (No. 5, 3rd Floor), corner of Fox and Loveday Streets, Johannesburg, under the charge of Mr. L. H. Nichols. This company is the foreign sales agent for the Walworth Manufacturing Company, manufacturers of a complete line of valves, fittings and tools, including the genuine Walworth Stillson wrench and the Kewanee Union; for Joseph Dixon Crucible Company, graphite crucibles, lubricants, paint and other products; and a number of other firms manufacturing steam specialities, regulating valves, pumps, and pipe-fittings, etc.

* * * *

Falcon Mine, Rhodesia.

Further drastic reductions are announced from the Falcon Mine, Rhodesia. A large number of staff and employees, in addition to those already paid off, have been given notice, and it is clear that high costs and the continued low price of copper may prove more than this mine can cope with.. It is fully understood in the district that if the mine has, unfortunately, to close down, there would be no hope of its reopening; nor is it a property, owing to the very costly form of reduction necessary, that would be taken up by a tributor. From what we can gather, says the "Rhodesia Herald," the employees on the mine are cooperating with the management in the most loyal way possible towards assisting in carrying operations on as economically as possible.

* * * *

Institution of Mining and Metallurgy Roll of Honour.

The memorial statuary group is approaching completion after some unavoidable delay, due in part to the difficulty of obtaining a sufficient supply of malachite suitable for the pedestal. The bronze figures (designed and modelled by Lieut.-Col. P. N. Nissen, D.S.O., M.Inst.M.M.) are in process of being cast, and the names are about to be engraved on the "Roll of Honour." The services of Colonel Nissen and the malachite for the pedestal have been presented. The Secretary writes: "With a view to making the roll as complete as possible, a list of those who have been directly reported as having lost their lives on active service is appended hereto, and I am directed to request members to communicate to me at once the names and as exact particulars as possible of any members whose names are omitted from the list. The Council trust that members will give this request careful attention and send any omissions or corrections as promptly as possible." The list of subscriptions to the memorial fund will be closed at an early date, and any members who have not yet subscribed and desire to do so are requested to send their donations promptly. There will be four silver plates fixed on the sides and ends of the pedestal. The "Roll of Honour" will be engraved on the two side plates, the full names, without rank or decorations, being engraved in alphabetical order in Old English block letters. On the two end plates the device of the cross-hammers will be engraved, and on the front end plate the following inscription will be engraved: "To commemorate the Members, Associates and Students of the Institution of Mining and Metallurgy who fell in the Great War, 1914-1918. Their name liveth for evermore." On the other end plate will be inscribed, "Presented by their fellow Members, Associates and Students in grateful remembrance." The date and other particulars of the unveiling of the memorial will be communicated to members in due course.

Concerning Mines and Men.

Mr. C. E. Farquharson has been appointed a member of the Rand Water Board to represent the Chamber of Mines in place of Mr. Arthur French, absent on leave.

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Mr. C. A. O. Bain, accompanied by his family, has left on a visit to England and the Continent. Mr. Adam Niven will be the Acting Chairman of the Pretoria Silver Company during the absence of Mr. Bain.

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Among the passengers for England by the R.M.S. "Saxon," which sailed this week, were Sir Lionel Phillips, Bart., Mr. H. Newhouse, and Mr. A. F. Mullins.

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Mr. Sidney Jones, the South African Manager of International Channelling Machines, Ltd., the makers of the "Siskol" coal-cutters and hammer-drills, has just returned from a business trip to the Old Country. We understand that in future the scope of this company's business will be considerably widened and many new mining specialities will be handled.

The Mexican Oil Situation.

The future of these fields is causing much perturbation to the oil producers and consumers, by reason of the invasion of salt water into the wells of the Panuco and Los Neranjos fields. Mr. Ralph Arnold, chairman of the American Institute of Mining and Metallurgical Engineers, emphatically states that at the present rate of production the latter end of 1922 will see the finish of the proved oil fields of Mexico. Last year (1920) these fields produced 185,000,000 barrels, or on an average of 500,000 barrels per day, of which Los Neranjos produced two-thirds.

If the present rate of production is maintained, 1921 will see about 200 000,000 barrels brought to the surface. The proved reserve is less than double this amount, hence at this rate of production we must see the exhaustion of these fields in 1922.

Last year the United States consumed 531,186,000 barrels, or 87,724,000 more than it produced. When the break in Mexican production does come, there must be a great reaction on the industry, not only of the United States but all over the world. How are the insatiable and continually growing demands of the world to be met? Where are the new foreign fields open to be drawn on or to replace these closing fields?

Doubtless other fields and wells will be discovered and opened up in Mexico itself, but the market cost of petroleum and its products must see a great advance, and we in South Africa should prospect and develop every possible indication for exploiting every mineral oil proposition we have, so as to obtain our own supplies and contribute to the world's near future demands.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings:

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

Rand Selection.—Twenty-ninth ordinary general; Corner House; May 17.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Knight Central.—Corner House; May 20.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Coal and By-products.

Alcohol from Coke Oven Gas.—The Colliery Guardian, March 11, p. 713.

Assay of Coal for Carbonisation Purposes.—The Colliery Guardian, March 11, p. 716.

Coal Mines Decontrol Bill.—The Colliery Guardian, March 11, p. 718.

The Sulphurisation of Coke by Hydrogen.—Iron and Coal Trades Review, March 11, p. 356.

Price of Coal in Relation to its Heat Value.—Electrical Review, March 11, p. 301.

Engineering.

Standardization of Materials Employed in Mining and Milling Plant.—The Bulletin of the Institution of Mining and Metallurgy, March, p. 33.

Copper Metal from the Consumer's Point of View.—Mining and Scientific Press (San Francisco), Feb. 26, p. 287.

The Choice of a Small Electric Winder.—Iron and Coal Trades Review, March 11, p. 360.

Influence of Transformer Connections on Third Harmonic Voltages, etc.—The Electrical Review, March 11, p. 300.

Vegetable Oils as Fuel for Internal Combustion Engines.—The Engineer, March 11, p. 255.

Lengthening the Parsons Tunnel on the G.W.R.—The Engineer, March 11. pp. 256-259.

High-Speed Power Shearing Machine.—The Engineer, March 11, p. 270.

Transmission of Power by Waves for Rock Drilling.—Mining Magazine, March, p. 139.

Metallurgy.

Degassing and Purification of Boiler Feed Water.—The Iron and Coal Trades Review, March 11, p. 364.

Recent Developments in the Microscopic Study of Coal. Canadian Mining Journal, Feb. 11, p. 109.

And continuation.—Feb. 18, p. 124.

Nevada Consolidated Copper Company, History of Enterprise.—Mining and Scientific Press (San Francisco), March 5, p. 325.

Miscellaneous.

Taxation of Mines.—Mining and Scientific Press (San Francisco), March 5, p. 317.

Elementary Facts About Oil.—Mining and Scientific Press (San Francisco), Feb. 26, p. 286.

Theory of Flotation.—Mining and Scientific Press (San Francisco), Feb. 26, p. 291.

Future of Angola.—The Mining and Engineering Record, March 5, p. 209.

German Mine Rescue Apparatus. — The Colliery Guardian, March 11, p. 715.

Mine Dust: Sampling and Treating.—Iron and Coal Trades Review, March 11, p. 345.

Apparatus for Closing Ore Bin Outlets.—Iron and Coal Trades Review, March 11, p. 355.

Latest London Quotations.

London, Wednesday, 4.20 p.m.—Gold, £5 5s. per oz. Buyers: New Modders, 63s. 1½d.; Modder B., 23s. 6d.; Modder Deeps, 40s. 3d.; Van Ryn Deeps, 68s. 9d.; Modder Easts, 10s. 3d.; Government Areas, 10s. 3d.; Brakpans, 47s. 6d.; Anglo-Americans, 19s.; Randfontein Estates, 12s. 7½d.; Randfontein Centrals, 8s. 3d.; New State Areas, 19s.; Chartereds, 12s.

The Recent Rand Strike.

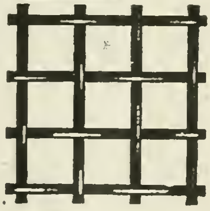
WHAT THE JOINT EXECUTIVES DEMAND—CANCELLATION OF GENERAL STRIKE BALLOT.

On Monday afternoon, at a joint meeting of the Department of Mining Industry and the Executive of the S.A.I.F., it was agreed that the memorandum addressed to Mr. E. S. Hendrickz, assistant general secretary of the South African Mine Workers' Union should be communicated to the Press. In the course of the memorandum, it is pointed out that at a joint meeting of the executives of the S.A.I.F. and the S.A.I.F. Department of Mining Industry, a deputation from the Union consisting of Messrs. P. Fisher and J. McKerrel was received, with a view to the latter placing before the joint executives the facts relating to the general strike ballot which the union had decided to proceed with despite the protest of other affiliated bodies.

"God Help the Unions!"

The impression gathered by the joint executives, particularly from the remarks of Bro. Fisher, was that the sectional action taken by the Union is likely to lead to a general strike of the Union, and that if such occurred the other federated unions would be involved, and since, therefore, they could not escape becoming involved anyhow, they might as well lend their support to compel the Chamber of Mines to condone the break in the service on the part of those who took part in the recent unauthorised strike. Alternatively if the S.A.M.W.U. members did not vote for a strike, or if the federated unions did not support the S.A.M.W.U. in their dispute with the Chamber, it would be "God help the unions," as they would ultimately share the same fate as the S.A.M.W.U. The foregoing process of reasoning was not one which appealed to the Joint Executives, and the element of intimidation which was suggested was regarded as an objectional feature of the views advanced by the delegate of the Union.

After detailng recent history the memorandum states: "The taking of a strike ballot, besides being a hostile act against other affiliated unions, cannot possibly assist those who are being unjustly punished. A general strike might only add more victims to a foolish policy, while failure to secure the necessary majority will only mean that in addition to victimising its own members, the Union has decided to 'rub it in' by chasing away any other hope. The Joint Executives definitely demand that the General Council of the S.A.M.W.U. should cancel the present general strike ballot, and that the Union immediately proceed to deal in a disciplinary manner with those who carried on the strike in defiance of the Union. In the event of these being satsifactorily carried out the Joint Executives are prepared to take all possible steps to have the anti-strike status reverted to in the case of those strikers against whom no case can be made."



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Cessation of Work at Daggafontein.

WHY THE MINE WAS CLOSED DOWN—OVER A MILLION SPENT.

The closing down of the Daggafontein mine has been a severe blow to the Farther Far East Rand in general and to the township of Springs in particular. But, as Mr. Buckle remarked at the recent Chamber of Mines annual meeting, the owners have put something like a million of money into it, and have got nothing whatever out of it. "Is it expected," asked Mr. Buckle pertinently, "that the owners should produce another million or two themselves? Suppose they haven't got the money, how can they possibly be compelled to spend it? Or suppose they have got the money, where is the justice of compelling them to spend it? Why should they, who have already expended large sums, which their employees and the local traders have gained, in the endeavour to establish a permanent industry, be singled out as suitable victims for spoliation?"

We give hereunder a brief resumé of the evidence given before the Commission appointed by the Government to enquire into the case of this proposition.

The Minister of Mines having appointed a Commission to inquire into the closing down of the Daggafontein Mines, a meeting of the Commission was held recently at the Council Chamber, Springs. The Commission comprised Colonel H. Bottomley, Inspector of Mines (chairman), Mr. C. R. Davies, consulting engineer, and Mr. J. Cowan, Deputy Mayor of Springs. The Minister had asked that the matter be expedited. The chairman inquired if there was anyone present to give evidence.

Mr. Langermann, representing the Daggafontein Mines, said a statement had been prepared showing the financial position up to February 28 of this year in regard to the Daggafontein Mines. The particulars were as follow: The Daggafontein Mines, Ltd., was registered on March 28, 1916, with a capital of £530,000, divided into 530,000 shares of £1 each, and allocated as follows: (a) Issued as fully paid to vendors, 398,033 shares; (b) issued at par to C.M.S. Company, 100,000 shares; (c) held in reserve, 31,967 shares; making a total of 530,000. The vendors of the Daggafontein Gold Mining Co., Ltd., who received 398,033 fully paid-up £1 shares as their consideration had expended the sum of £341,591 on boreholes, shafts and equipment, exclusive of their property and other accounts.

In order to provide further working capital for the company, the Consolidated Mines Selection Company undertook to take up 200,000 shares at par.

Increase of Capital.

During 1917 the capital of the company was increased by 200,000 £1 shares to £730,000, and towards the end of the year and early in 1918 the Consolidated Mines Selection Company took up the said 200,000 shares at par in terms of their undertaking. On February 22, 1919, the capital of the company was further increased by 250,000 £1 shares to £980,000, in order to provide for the issue of that number of shares to the holders of the 25,000 three-year options at par. The shares were duly taken up by the option-holders. The 125,000 four-year options, at 22s. 6d., were not exercised, although the date of expiry of these options was extended for six months. The five-year options at 25s. were also extended for a period of six months to September 27, 1921, but there does not seen to be any chance for them to be exercised.

Funds Nearly Exhausted.

These two sources of obtaining further working capital were closed to the company, and by the end of June, 1919, the company's available funds were becoming exhausted.

In order to provide further working capital to enable the company to carry on its mining operations without interruption the Consolidated Mines Selection Company thereupon agreed to advance or procure advances to the company of sums of money aggregating a total of £250,000, as and when required up to June 30, 1920.

The funds of the company again having become almost exhausted, the Consolidated Mines Selection Company agreed to advance, or procure advances, of further sums of money aggregating £200,000, as and when required from June, 1920, in order to enable the company to continue its operations. The Consolidated Mines Selection Company and friends had, therefore, guaranteed thereon £450,000, and on February 28, 1921, £420,776 had been actually borrowed by the company, leaving an undrawn balance of £29,224, which the company has since been drawing as required.

Position Summarised.

The following figures show the income, expenditure, and available balance of the company from its inception in March, 1916, up to February 28, 1921: Issued capital, £948,033, in £1 shares, of which 398,033 issued to vendors—difference, £55,000. But vendors' consideration included £2,437 cash and stores; total, £552,437; working capital, £552,437; loans, £420,776; sundry creditors, £23,473; sundry revenue, £20,704; total, £1,017,390.

The expenditure by Daggafontein Mines, Ltd., was as follows: Property (transfer duty, etc.), £8,444; estate buildings and improvements, £488; shaft sinking, permanent haulage ways and equipment, £717,970; development, £160,644; general expenditure (including interest on loans and underwriters' commission, £88,708; stores, £30,513; shares and interests, £1,690; sundry debtors, £2,657; cash, £6,276; total, £1,017,390.

At the end of February the balance of the loan withdrawn was £29,224. Cash and cash assets (including stores on hand at book value) amounted to £41,136. Total, £70,360, less sundry creditors, £23,473, leaving a balance (assuming that all the liquid assets were realised) at that date of, say, £46,887. The operations of the company during March absorbed a portion of the available cash balance, and it is anticipated that there will be sufficient funds to carry on the work for another month or six weeks.

It will be seen from the above statement that at February 28, 1921, the Daggafontein Mines, Ltd., had spent on shaft sinking, permanent haulage ways, equipment and development, the sum of £878,614. Prior to the date of the acquisition of the property by Daggafontein Mines, Ltd., the vendors had spent for the same purposes the sum of £34,159. The total sum of money therefore spent on shaft sinking, permanent haulage ways, equipment and development on the property up to February 28, 1921, amounted to £1,220,205.

The Board's Decision.

In consequence of the funds of the company having again become almost exhausted, and the impossibility in the present unsatisfactory state of the money market of raising further funds, the board reluctantly decided, on March 10, 1921, to suspend all mining operations until the times are more favourable for the raising of new capital. As soon as there is an improvement in the money market the board will endeavour to arrange for the provision of further funds, so that the development of the property may be resumed.

In the course of evidence, Mr. Unger, assistant consulting engineer, gave particulars as to the state to which development had reached, and promised to send to the commission the particulars desired. Mr. Unger gave details as to footage, and submitted an assay plan.

The Chairman said he was informed that a dyke on the overhanging wall carried value.

Value of the Dyke.

Mr. Unger stated that they had not been able to discover its value.

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ENGINEERING SECTION.

Delagoa's Coaling Plant.

UNFORTUNATE ACCIDENT TO THE McMYLER EQUIPMENT.

An unfortunate accident which resulted in the breakdown of the Delagoa Bay Coaling installation occurred at the port of Lourenco Marques on March 25th or 26th. This will involve at least seventeen days' delay in the export of coal from the Portuguese Port.

The McMyler Tipper.

Delagoa Bay has since May, 1914, been equipped with an electrically driven coal loading appliance, of the McMyler System, by which the contents of any size and capacity trucks up to 85,000lbs. of coal are dumped into shipholds at the lower end of the inclined coal pan, into which the trucks are emptied. There is a telescopic chute of square section, which, reaching down into the ship's hold, prevents a big drop of the coal, and serves as well to aid in the work of trimming, the lower part of this chute being movable in four directions.

The electric motors are continuous current for 500 volts working pressure, and of the following normal rated output:

Two 250 h.p. compound wound motors for hoisting the cradle with the truck.

One 50 h.p. series wound motor for lifting or lowering the apron of the pan.

One 75 h.p. series wound motor for operating the pan or big chute.

One 33 h.p. series wound motor for controlling the telescopic chute.

One 50 h.p. series wound motor for working the ship haulage gear.

Total, six motors of an aggregate capacity of 708 brake haulage power.

The control of the two cradle-hoisting motors is automatic on the principle of "Magnetic Contractors."

Formerly all loading of cargo and bunker coal was done by hand, by baskets on the heads of natives or by means of tip-buckets of half up to two tons capacity handled by the ordinary electric wharf-cranes.

The new plant was ordered by the Government of the Province of Mocambique on the 17th of April, 1913, and was erected and in working order by the 18th of May, 1914.

The contractors were Messrs. the McMyler Interstate Company of Cleveland (Ohio), U.S.A., for the whole plant. They built the mechanical part, the electrical equipment being supplied by the Westinghouse Electric and Manufacturing Co., of Pittsburgh (Pennsylvania).

In connection with the coaling machine there is betwen the power station and the hoist an accumulator battery—so-called floating battery—of 265 cells, 1,332 ampere-hour capacity on the one hour rate of discharge, together with an Entz Booster set. The battery is of the well known Tudor System, and was supplied by the Hagen (Westphalia Works of the Accumulatoren-Fabrik Aktiengesellschaft, Berlin; the Entz Booster set was built by the General Electric Company of Schenectady (N.Y.), U.S.A.; the Booster motor is of 130 h.p., 178 amperes, the generator of 980 amperes, 90 up to 150 volts, normal rated output.

All the power necessary is supplied in bulk by the Tramway Power Station of the Delagoa Bay Development Corporation, Ltd., about one mile distant from the wharf distributing station.

The Cost of the Coal Equipment.

The cost of the entire plant was about £30,000, including two 80-ton weigh-bridges fitted with automatic weight printing device built by the Howe Scale Co., of Rutland, Vt., U.S.A., and a ship haulage machine built by the Litchfield Machine and Foundry Company of Litchfield, Ind., U.S.A., for the purpose of moving ships, i.e., changing the holds beneath the telescopic chute independently of working the ship's own winches or capstans. About £15,000 was spent on the foundation for the plant itself, and £40,000 in building 200 metres of wharfage adjoining the appliance. Another expenditure of about £15,000 was necessary for earthworks, filling in, approaches, reclamation of the foreshore, etc., making a total expenditure of roughly £100,000.

We learn that a test working of the second coaling installation, which is to be installed at Delagoa, took place the other day, but it will, of course, be some considerable time before the new equipment can be working.

The Electricity Supply Bill.

MUNICIPALITIES PERTURBED—FAR-REACHING LEGISLATION PROPOSED.

Municipalities all over the Union are greatly concerned, it would appear, over a Bill which is being presented to Parliament this session to deal with matters concerning the supply of electric light power. The Bill is a remarkably far-reaching one. Apparently it has been drawn up by a Commission consisting of Sir W. W. Hoy, Sir R. N. Kotze, Messrs. H. J. van der Byl, D. A. Lewis, D. A. Hendrie, T. P. Park, J. A. Vaughan, J. Denham, E. Sturman and A. J. Drakes.

The first section of the Bill provides for the establishment of an Electricity Board, "in which the control of all electricity supply is vested, and which will decide all questions relating thereto." Further, the Bill will provide for the appointment of local advisory committees, consisting of suppliers and consumers, who will have no executive functions, but whose duty it will be to advise the Electricity Board. The Bill also contemplates the establishment of Government generating stations, the first of which will probably be those required for the electrification of the railways.

Government Control.

Sections 30 and 13 of the Bill embody a certain measure of control over the municipal supply of electricity. "The committee is of opinion," it is stated in the letter which that body sends to the Minister of Mines and Industries in conjunction with the Draft Bill, "that these powers are necessary in the public interest, because ratepayers, although theoretically able to protect themselves against the establishment or continued working of an inefficient municipal power station, are in practice helpless against this. On the Witwatersrand, for example, we have an instance of a municipality establishing a power station and generating electricity at a cost in excess of the price at which it could have been purchased in bulk from the Victoria Falls Power Co., to the detriment of the ratepayers."

The powers which the Bill proposes to confer on the Electricity Board are very far-reaching, and, if enacted as set out in the draft Bill, are likely to have a very great effect on municipalities which undertake the supply of light and power. For instance, if the Board is of opinion that economy would result from the combination of two or more electrical undertakings, whether municipal or private, it might "authorise or require" the combination of these undertakings. Section 30 of the proposed Bill goes even further, and states that "If the supply of electricty from any municipal undertaking is being generated, or the Board deems that it is likely to be generated, at a higher cost than it can be obtained by purchase from any other undertaking, the Board may order that the supply, wholly or in part, shall be purchased from the latter."

How Johannesburg is Affected.

In other words, this Board would appear to have the power to order the Johannesburg Town Council to get the whole of its power from the V.F.P. There are many other provisions which would make it possible for a large consumer to apply for authority to get their power from any other source than the municipal power station, while there are other sections which empower private suppliers of current, under certain conditions, to break up the streets in a town for the purpose of laying their cables. Municipalities, enquiry shows, generally regard the proposed Bill as a very serious matter, and are of opinion that their interests are detrimentally affected in many directions. The Johannesburg Town Council has held a special meeting in committee to discuss the proposed Bill; and it is understood that strong opposition was offered to a number of the clauses. The view taken by the Council was that the matter was of such vital importance that a deputation of six members should be sent to Capetown to express the views of the Council to the Government. It was also reported that a conference of Mayors will be held in Capetown in reference to the matter, and Mr. John Christie, M.L.A., will attend this on behalf of Johannesburg. It is probable that there will be a congress of municipal electrical engineers to consider what steps should be taken to see that the interests of the municipalities with established power do not suffer under the proposed legislation.

Largest Aeroplane Engine on Record.

Great Britain claims the credit of having built the largest aeroplane engine on record. Recently there was tested in a factory near London an engine which developed over one thousand horse power. This engine, which was built to the order of the Royal Air Force, has sixteen cylinders, weighs close on one ton, and is most economical in fuel and oil consumption. Its influence on the range, speed and carrying capacity of aeroplanes is expected to be considerable, and its performances in the air are awaited with the keenest interest by aviation experts.

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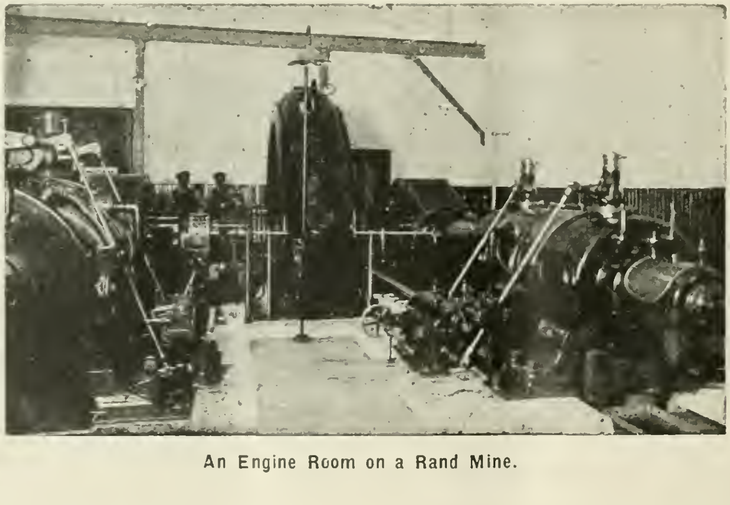
Coloured Concrete Buildings.

One of the drawbacks to ferro-concrete, which is now being used so largely in building construction, is the dull, monotonous grey tone of the cement. A British architect has thrown out a suggestion that pottery manufacturers should consider the possibilities of decorating the face of a concrete building as they decorate pots and other vessels. The ferro-concrete carcase, he points out, could thus be clothed in a garment of permanent and beautiful colour, capable of great variety. Regular patterns could be used without fear, and indeed, the whole structure might be covered with rich colouring like a Persian or Turkish carpet. There were also opportunities for modelling in relief. He held out this prospect as offering scope for the further development of the British pottery industry.

* * * *

Measuring One-millionth of an Inch.

In some classes of engineering work the standard of accuracy demanded is so high that even the most delicate form of mechanical measuring appliance is not sensitive enough to gauge whether the dimensions of an article are within the limits allowed. To meet these cases a British firm has introduced a most ingenious optical measuring gauge. It is based on the optical phenomenon of "interference bands"—a phenomenon first elucidated by the great Sir Isaac Newton. By means of this gauge differences in thickness of one ten-thousandth part of an inch can be shown with certainty, and even differences of one hundred-thousandth part of an inch can be easily estimated. The instrument is extremely simple, and can be used either in broad daylight or by artificial light.



An Engine Room on a Rand Mine.

The Sonoscope: A Remarkable Invention.

Some particulars of the sonoscope, which is a remarkable new invention for the location of mechanical defects, are appended.

The machine is fitted with what are known as binaural attachments. The perfection or otherwise of machinery in motion is usually indicated by the degree of noise resulting, any unusual noise is always an indication of some alteration in the running conditions, and the rapidity with which the sound can be traced is important, as when the cause is definitely located immediate steps can be taken to deal with the matter with the minimum amount of work in taking down parts which may or may not in any way be at fault.

The binaural sonoscope serves the engineer in exactly the same way as the stethoscope is used by the medical profession, reproducing the mechancial sounds unaltered at the ear of the operator, but only those sounds are reproduced which are at a maximum at the point of contact of the test rod, therefore sounds which normally confuse the hearer and make location difficult, are in this instrument entirely eliminated.

The test rod applied to the suspected part in different places until the sound is at a maximum, and the user can then judge from the nature of the noise what is the exact defect, bearing in mind that the time taken to trace a noise on machinery in motion is due to the confusion caused by general *external* sounds and the difficulty of access to any moving parts with safety.

With the sonoscope only the sound of the particular part to which the instrument is applied is conveyed to the ear of the operator, all general noise being excluded.

Suggested Methods of Application.

For use on internal combustion engines both on the bench and during testing on the road and track the instrument is applied and such defects as piston slap, loose bearings, incorrect valve tappet clearance, defective cams, etc., can be traced with certainty to the actual part.

For gear box and back axle tests on the road when running, the instrument can be attached to the part under test by a special bracket, and the operator can remain in the car or even drive same, and note the results under actual conditions.

This also applies to engine tests on the track, as the instrument can be attached to any one cylinder and the results noted. For marine engines the value of the device is clear, as with the instrument fixed the operator is able to listen in comfort and there is no risk even with a heavy swell. The possible applications to all classes of machinery being unlimited, many uses will suggest themselves to any engineer, and these remarks are only in the nature of suggestions.

The sonoscope maufacturers are The Capac Co., Ltd. 2, Woodstock Street (next to Bond Street), London, W.1.

Specification and Prices.

Type. A.—The Sonoscope complete in case with type 1 ear pieces, three joint testing rod extending to 2 feet. Suitable for all work in connection with locating knocks, etc. Price 38s. 6d.

Type B.—The Sonoscope complete in case, but with type 2, special pneumatic ear pieces and hinged spring head band, giving maximum comfort and freedom from external noise, suitable for use on cars, marine engines and where external noise is considerable. Price 63s.

Special short 2in. rod and bracket clamp, 5s. 6d. each; spare diaphragms, standard for replacement, 5s. each; Special: To reduce volume at ear, X.1. and X.2., 5s. each; to increase volume at ear, O1, O2, O3, 5s. each.

Comparison of Sound Volume.

Another adaption of the instrument is in connection with the comparison of the amount of sound from, say for example, two gear boxes. It is obvious that any device which will assist in the determination of the amount of noise caused by any moving part will be of assistance in maintaining a standard degree of silence and efficiency.

It is also necessary for the comparison of sound volume, that two different operators should attach the same valve to a given sound, although it is probable that individual hearing abilities will differ to a marked degree.

To meet this, a damping device can be obtained which will fit the standard instrument used for sound locating, and in operation the user sets the zero mark on the scale (which is adjustable), to suit his individual hearing abilities. It therefore follows that within limits the value, as read on the scale, is the same for a given source of noise without regard to the hearing abilities of the user.

Damping valve for comparing sound volume, with adjustable zero scale. Price 21s.

* * * *

Electrically Welding a Large Steam Pipe.

As an indication of the bold development of electric welding in Great Britain, nothing could be more striking than the jointing of a steel steam pipe, one foot in diameter. The pipe is 1,600 feet long, and all the joints are made by electric arc welding. After welding, the main was subjected to rigorous tests, and it has been in satisfactory use for some time carrying steam at the exceptionally high pressure of 250 lbs. to the square inch. This is the first time that so ambitious an application has been made.

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March Gold Output : Group Returns.

CENTRAL MINING/RAND MINES GROUP.

Company.	Tons crushed.	Yield in Fine Gold Ozs.	Estimated Value.	Estimated Profit.	Estimated Working Costs per Ton.
City Deep	85,000	36,584	£188,866	£63,332	29 6
Cons. Main Reef	47,800	16,759	86,321	8,355	32 7
Crown Mines ..	187,000	51,218	264,415	32,741	24 9
Dur. Rood. Dp.	26,500	8,778	45,320	741	33 7
E.R.P.M.	131,500	34,270	176,334	1,040	26 2
Ferreira Deep ..	32,000	10,290	53,123	10,986	26 4
Geldenhuis Dp.	46,950	12,781	65,958	*2,760	29 3
Knight Central..	25,800	6,178	31,693	*388	24 10
Modder B.	57,000	29,200	150,746	75,595	26 4
Modder East ...	26,000	10,430	53,846	13,192	31 3
New Modder ...	92,000	43,114	222,575	110,475	24 4
Nourse Mines ..	42,000	13,253	68,419	1,255	31 11
Robinson	39,800	7,814	40,213	1,000	19 8
Rose Deep	53,300	12,871	66,600	9,090	21/ 7
Wolhuter	32,200	8,291	42,525	4,750	23 5
Village Deep ...	48,700	14,643	75,599	3,274	29/ 8
Tls. & averages	973,550	316,474	1,632,553	335,678	26/ 7

* Loss.

Modderfontein East, Limited: 34,492 tons handled at the mine, of which 17,112 from stopes, 2,398 sorted at the mine, total transported to Apex 32,094.

Village Deep, Limited: Decreased profit largely due to lower value of yield.

General: The valuation of gold has been taken at £5 3s. 3d. net per fine ounce. The generally improved results as compared with February are due to the longer month and the fact that during February a serious strike occurred on certain mines.

CONSOLIDATED GOLD FIELDS.

Company.	Stamps. Running.	Tube Mills.	Tons Crushed.	Gold declared. Fine ozs.	Profit.
Simmer and Jack .	320	7	61,100	13,540	£3,627
Robinson Deep	160	10	60,100	17.279	9,503
Sub Nigel	30	2	9,900	5,557	6,487
Totals	510	19	131,100	36,376	£19,617

Gold in reserve.—Simmer and Jack, 500 ozs.; Sub Nigel, 2,134 ozs.; total, 2,634 ozs.

The revenue derived from gold for the month of March is calculated at the rate of £5 3s. 9d. per fine oz., less estimated gold realisation and exchange charges of 6d., or a net figure of £5 3s. 3d. per fine oz.

Increased tonnages were due to improved supply of native labour.

BARNATO GROUP.

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.
Consolidated Langlaagte ...	100	42,000	£62,419
Government Areas	200	136,000	283,140
Langlaagte Estate	200	40,000	62,290
New Primrose	115	21,700	24,397
New Unified . ..	60	10,900	13,219
Randfontein Central	450	120,000	187,468
Van Ryn Deep	90	50,600	138,977
Witwatersrand	215	32,000	47,940
Totals and averages ...	1,430	453,200	£819,850
February totals	1,429	358,300	£671,284

Mine.	Total Working Costs.	Working Costs per Ton Milled Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte	£50,331	23·967	£12,393
Government Areas	147,929	21·754	136,042
Langlaagte Estate	53,165	26·733	9,114
New Primrose	22,827	21·038	1,707
New Unified	11,491	21·085	1,884
Randfontein Central	175,349	29·225	13,420
Van Ryn Deep	67,445	26·658	73,063
Witwatersrand	43,690	27·306	6,004
Totals and averages ...	£572,527	25·265	£253,627
February totals	£489,570	27·327	£187,423

Note.—The above results are arrived at by calculating the gold at £5 3s. 9d. per fine oz.

Monthly Gross Profits.—January, £269,638; February, £187,423; March, £253,627.

CONSOLIDATED MINES SELECTION GROUP.

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled.
Brakpan Mines	110	52,000	28/ 7·575
Springs Mines	80	42,000	29/11·215
Totals and averages	190	94,000	29/ 2·560

	Value of Gold declared.	Yield per Ton.	Working Profit based on standard value of Gold.	Working Profit per Ton.
Brakpan Mines ...	£94,332	36/ 3·380	£19,891	7/ 7·805
Springs Mines ...	79,153	37/ 8·305	16,291	7/ 9·090
Totals & averages	£173,485	36/10·940	£36,182	7/ 8·380

	Estimated Premium, taking Gold at £5 3s. 9. per fine oz.	Total Estimated Profit.
Brakpan Mines	£20,159	£40,050
Springs Mines	16,893	33,184
Totals and averages	£37,052	£73,234

UNION CORPORATION GROUP.

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Total Revenue.	Revenue per Ton
Geduld Proprietary..	100	45,000	15,359	£80,515	35/ 9
Modder Deep	70	42,700	22,809	118,383	55/ 5
Totals	170	87,700	38,168	£198,898	—

Company.	Costs. Total.	Costs. Per Ton.	Profit. Total.	Profit. Per Ton.
Geduld Proprietary ...	£55,933	24 10	£24,582	10 11
Modder Deep	47,731	22 1	70,652	33 1
Totals	£103,664	—	£95,234	—

The above results are arrived at by calculating the gold produced at £5 3s. 9d. per fine oz. Realisation charges in excess of normal are debited direct to revenue.

TRANSVAAL G.M. ESTATES.

Central Mines: Tons crushed 11,000, yielding 2,918 fine ozs. Elandsdrift Mine: Tons crushed 1,520, yielding 1,014 fine ozs. Vaalhoek Mine: Tons crushed 1,425 yielding 573 fine ozs. Estimated value of month's output £22,415; estimated profit for month £1,071. The month's results are based on a value of gold of £5 2s. 9d. net per fine oz. About 200 fine ozs. held up in gold slime carried forward. Slime could not be electrically dried owing to power breakdown.

GENERAL MINING & FINANCE GROUP.

Company.	Tons Crushed.	Total Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	10,000	£11,421	28·85	£11,688	£264
Meyer & Charl.	14,300	19,986	27·95	45,459	25,473
New Goch ..	16,600	19,680	23·71	20,553	873
Roodepoort Un.	23,000	25,617	22·28	22,448	*3,170
Van Ryn Est..	31,100	40,108	25·79	47,720	7,612
West Rand Cn.	32,300	41,214	27·38	19,231	5,018
	127,300	£164,029	25·77	£200,099	£39,240
				Less loss	3,170
					£36,070

* Loss.

In calculating the revenue, gold has been taken at a value of 103s. 9d. per fine oz., less estimated realisation charges.

ROUXVILLE DIAMONDS.

The following are the results of washing operations at the Rouxville Diamond Mine for March: Loads washed, 1,778; number of stones recovered, 460; total weight, 151¾ carats.

Natal Ammonium, Ltd.

Owing to the depressed state of the Sulphate of Ammonia market, coupled with the high cost of production, the Directors of this Company have decided to suspend operations on or about April 30th.

GLYNN'S LYDENBURG.

Tons crushed 3,277, yielding 999 fine ozs. Estimated value of month's output £4,990; estimated loss for month £367. The month's results are based on a value of £5 2s. 9d. per fine oz. net. Loss due to low recovery caused by temporary extraction difficulties.

WIT. DEEP.

The estimate of results for the month of March, 1921, is as under: Tons milled, 37,780; gold recovered, 10,602·534 ozs.; average number of stamps running, 165; stamps running time, 25·093 days; tube mills, 5; development footage, 337. The working expenditure, including head office charges, for the month is £47,476, or 25s. 1d. per ton. The estimated working revenue based on an estimate of £5 3s. 9d. per fine oz. (less 6d. realisation charges) is £54,669, or 28s. 11d. per ton. The estimated working profit is £7,193, or 3s. 10d. per ton, from which is to be deducted the capital expenditure for the month of £1,990, leaving a surplus of £5,203.

Several important articles, including the papers of Dr. Orenstein and of Mr. Gray on Ventilation and Phthisis, are unavoidably held over to next week's issue.

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RHODESIAN SECTION.

SETTLEMENT OF THE RECENT MINE STRIKE.

Terms of the Agreement.

The Rhodesian mining dispute which began on February 19 was, as has already been announced, definitely settled on the 21st March. The terms of the agreement between the parties are interesting, more particularly with reference to the machinery set up, the operation of which, it is hoped, will prevent similar stoppages of work in future. The salient points of the arrangement are as follow:

1. It is hereby agreed by the Unions that they unconditionally recognise and guarantee the right of the members of the Mine Owners' Association to employ or not to employ such persons as they think fit without dictation or interference by or on the part of the Executive or members of the Unions, and that its guarantee is the foundation of this agreement.

2. The Mine Owners will not penalise any of the workmen in connection with the present strike, and that the men will be taken on as the resumption of work permits.

3. In regard to substitution of white labour by coloured labour, there will be no alteration; matters will continue in regard to this on the exact lines existing prior to the Shamva strike.

4. The Mine Owners do not differentiate in the employment or discharge of workmen between union men and non-union men, and raise no objection to friendly efforts being made by union men to induce non-union men becoming members of any responsible union, and it is mutually agreed that no coercive methods will be used by the Unions in this connection. As regards members of staffs or officials being eligible for membership of the Unions, this shall not be permitted, but the Mine Owners' Association record that this matter may be brought up for discussion at a conference to be arranged by the parties hereto at a future date.

5. No stoppage of work owing to labour disputes shall occur under any pretext whatsoever until a full enquiry as provided in Clause 7 hereunder shall have first taken place and every legitimate method shall have been exhausted, and it is further agreed that under no circumstances whatsoever shall differences of opinion of a purely domestic nature arising between Trades Unions or Trades Unions and non-unionists be allowed to cause any stoppage or suspension of work by the respective members of such Unions.

6. The members of the Mine Owners' Association shall be under no obligation to collect the monthly subscriptions of members of the Rhodesian Mine and General Workers' Association, but the Mine Owners' Association undertake to reconsider this if the Transvaal Chamber of Mines authorise the resumption of collection for the South African Mine Workers' Union.

7. Conferences between the Mine Owners' Association and the Joint Executives of the responsible Unions shall be held after adequate notice at the request of either Executives of the Mine Owners' Association or the Executives of responsible Unions so long as it is mutually agreed upon that the subject for consideration is of sufficient importance and one open for discussion, and further that all minor differences should be settled between the mine management and the local Branch of the Unions concerned; and further, on the Mine Owners' Association undertaking to consider favourably the creation of local boards to deal with the minor differences.

In witness whereof the duly accredited representatives of the respective parties have hereunto set their hands this 21st day of March, 1921, in the presence of the subscribed witnesses.

The agreement was signed as follows: For the Rhodesian Mine Owners' Association: J. G. McDonald, Theo. Haddon; J. D. Morton, Secretary. For the Rhodesian Branch of the Amalgamated Engineering Union: D. MacLachlan (Chairman, District Committee, Bulawayo), E. Owen Williams (Umtali), E. S. Magrath, S.A.C., Thos. Matthews (Chairman, S.A.C., A.E.U.). For the Rhodesian Mine and General Workers' Association: J. Cremer, Herbert Walsh. As witnesses to all signatures: W. J. Atterbury, J. D. Morton.

Memorandum.

In consideration of the agreement signed this day between the Mine Owners' Association, the Rhodesia branch of the Amalgamated Engineering Union, and the Rhodesia Mine and General Workers' Association, it is agreed between the respective parties as arranged at the recent conference—

(1) That the Executives of the respective Unions shall direct their members to resume work forthwith upon all the mines of the Mine Owners' Association.

(2) That in regard to the dismissal of the man Stewart by the Wankie Colliery Company, Ltd., he shall be regarded as suspended, and his case shall be investigated by Mr. A. R. Thomson and Mr. Magrath, whose decision shall be final and binding upon the parties thereto.

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.
SURVEYOR'S CERTIFICATES — March, July and October (Extra) Exams. 100 %, 50 % and 66 % respectively of S A. total.
MANAGER'S CERTIFICATES. — Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A.
OVERSEER'S CERTIFICATES.—Two-thirds of the S.A. total for year 1920. 75 % for January, February, March, 1921.
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FEBRUARY MINERAL PRODUCTION.

Summary of Official Statistics.

We have received for publication the details of the Rhodesian mineral output for February, as issued by the Rhodesian Chamber of Mines, from which a summary is taken:—

	Value.
Gold, 40,816·06 fine ozs	£288,226
Silver, 10,516·82 fine ozs.	3,010
Coal (raised 11,409 tons) (sales)	12,640
Coal used for coke and bricks	7,403
Copper (blister), 231·77 tons	48,931
Chrome ore, 9,324·71 tons	36,125
Asbestos, 2,227·45 tons	£372,918
Arsenic, 17·16 tons	698
Mica, 6 tons 938 lbs.	1,617
Diamonds, 23 carats	110
Total	£771,678

Includes £102,845 premium on gold.
Includes £328,410 adjustments on sales 1/4/19 to 31/12/20

Comparisons—February, 1921.

Gold—

January, 1921	46,955·88 fine ozs.
February, 1921	40,816·06 fine ozs.
Decrease	6,139·82 fine ozs.
February, 1920	44,236·62 fine ozs.
February, 1921	40,816·06 fine ozs.
Decrease	3,420·56 fine ozs.
January, 1921	£293,794b
February, 1921	£288,226a
Decrease	£5,568
February, 1921	£288,226a
February, 1920	£250,020
Increase	£38,206

Silver—

February, 1921	£3,010
January, 1921	£1,988
Increase	£1,022
February, 1920	£3,943
February, 1921	£3,010
Decrease	£933

Base Mineral Production—

February, 1921	£480,442x
January, 1921	£108,827
Increase	£371,615
February, 1921	£480,442x
February, 1920	£66,646
Increase	£413,796

Total Mineral Production

February, 1921	£771,678ax
January, 1921	£404,609b
Increase	£367,069
February, 1921	£771,678ax
February, 1920	£320,609
Increase	£451,069

a Includes £102,845 premium on gold.
b Includes £95,293 premium on gold.
x Includes £328,410 adjustments on sales April 1, 1919, to December 31, 1920.

* * * *

MINING AND LIVING COSTS.

An Accountant's Investigations.

Mr. A. C. Raymer, the public accountant and auditor, writes to the *Bulawayo Chronicle*: With reference to the cost of mine working expenses and the cost of living on mines, I have compiled the following tables from average working costs of various mines, the accounts of which have come under my purview. The statistics are from neither large mines nor small ones, and may be taken as a fair criterion of the general average of increased costs to the industry in Southern Rhodesia. The figures do not include costs of plant and the erection thereof, development redemption, depreciation of plant, buildings, etc., and gold realisation charges:—

1914 shows an increase over 1913 of		2	per cent.
1915	,,	,,	2·0 per cent.
1916	,,	,,	5·0 per cent.
1917	,,	,,	11·3 per cent.
1918	,,	,,	17·4 per cent.
1919	,,	,,	23·0 per cent.
1920	,,	,,	41·7 per cent.

The gold premium for 1920 was 30 per cent.

Analysis of expenditure for the years 1913 and 1920 show the following comparisons:—

Native wages, native food (meal, meat, monkey nuts, beans and other vegetables), mine timbers, wood fuel and other local products, 8 per cent. increase.

White wages and salaries, 32 per cent. increase.

Explosives, tools, machinery spares, mill and cyanide stores, etc., 78·5 per cent. increase.

The sharp rise for 1920 was mainly due to increased cost of railage and white wages.

As regards the cost of living on mines, my researches show 1920 to have been about 35 per cent. higher than 1913, ranging from 20 per cent. on foodstuffs to 120 per cent. on clothing.

* * * *

Mining in the Congo.

AN OPTIMISTIC SURVEY.

At Brussels recently Mr. Minette d'Oulhaye, an engineer, who has had lengthy experience in many parts of the world, gave an address on the Mining Industry in the Belgian Congo, a few points from which (taken from a report published in the "African World") are here given:

The Congolese mining industry is still in its childhood. The Congo is an extremely rich mineral country. As a result of several unavoidable circumstances, the Katanga copper mines produced last year but 19,000 tons, having already produced much more previously. There are 14,000 people working in these mines. The Katanganese tin mines are worked by the Union Minière and by the Géomine. Together these two companies employ at their tin mines 1,500 natives, and produce each nearly 300 tons of cassiterite. Shortly their tin mines will be able to produce 2,000 tons. The working of two Katanga coalfields will be

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started in the very near future. Each will, from the beginning, easily sell 30,000 tons yearly. In the not too distant future their total output should be 200,000 to 300,000 tons. Wankie may then lose the Katanga market. Some of these coalfields are worked from the surface, without shafts having to be made. Some others will be worked openly as quarries. Coal is met at low depths, in beds of considerable thickness (two metres) and in remarkably flat formations. The Kilo goldfields produce over 3,000 kilograms, and have a native labour of 8,000. The alluvial wash has an average yield of three grammes per ton, and the veins yield about 14 grammes per ton. The Kassai diamond fields produce 200,000 carats yearly. Ten thousand natives are working. The source of the diamonds has not been discovered. They are met in alluvial formation, and the diamondiferous gravel worked is on the banks of the rivers. The coming working of iron mines is one of the topics of the day, and the creation in Katanga of ironworks is now being contemplated. Some stone quarries are already being worked. Shortly cement works will be established. Central Africa is the part of the world which civilisation reached the latest, and methodical prospecting was started only over ten years ago. So, one can state that up to now the soil surface has only been scratched. To prospect in 1910 was uneasy, uncomfortable, and not always without danger. Since then a great change for the better has taken place, and at his third stay in the Congo, in 1918, Mr. Minett d'Oulhaye was astonished at the progress materialised.

The Marketing of our Gold.

Mr. W. Ingram-Lyon, City Editor of the *African World*, has some interesting comments to make on a suggestion which appeared in the columns of THE MINING JOURNAL a few weeks ago.

He writes:—THE SOUTH AFRICAN MINING JOURNAL, in a recent issue, raised a very interesting matter for discussion. It stated that it had been suggested that it might be a good thing were the Rand each month to market only sufficient gold to pay operating expenses, and to retain the balance for disposal at the most favourable opportunity. Let us assume that the Rand would be able to set aside something like £2,000,000 each month to play with, I should much like to know who is going to be appointed to decide when the "favourable opportunity" occurs for disposing of the surplus. The question would also have to be decided whether it would be within the province of any board of directors to gamble with the funds of the company, even though the profits—if any—of the gamble should accrue to the company. It seems to me that unless specific permission be given for the purpose in the articles of association any loss which might occur could be recoverable by the shareholders, and when I say loss I mean the difference between the highest price touched during the period in which sales were possible and the actual price realised. Putting that possibility on one side, however, what chances are there of successfully foretelling price movements? I doubt whether any exchange expert, whether in New York, London or Pretoria, could correctly guess whether the New York rate at the end of March would be 3.88 dollars or 4.0 dollars, or any other figure. The currency price of gold varies relatively to the sterling value of the dollar, which again varies not only in accordance with the trade demands of Britain, but the whole exchange requirements of Europe, which sells local currencies for sterling, and then exchanges the latter for dollars, if purchases of American commodities have to be paid for.

Gambling in Gold.

An important factor likely to affect the New York valuation of sterling is the funding of the Allied debt to the United States. If all these loans are put on a satisfactory footing, sterling may jump to an even 4 dollars, while if the German Government should agree to make a substantial payment on account of reparations, sterling might get an additional boost up, while, on the other hand, an Allied occupation of German territory might send the exchange down to 3.50 dollars. Then the position as affected by the rise or fall in the prices of commodities would have to be considered—that is, the value of American imports and exports, not only to this country, but to all countries. The less the value of exports, the less amount of sterling would have to be sold in New York, with the probability that sterling would improve. Frankly, I should like to believe that such a proposal as suggested would be practicable, but exchange is one of the most tricky things in finance, and dealing in "gold futures" would be more likely to land the novice in loss than even playing on the Stock Exchange in share values. As things appear to be shaping at the moment of writing, and there are several contradictory "possibles" in the air, I should be much more inclined to bet on the prospect of a 4-dollar exchange than on one of 3.75 dollars, or, in other words, the currency price of gold is much more likely to recede than to improve. The chances of gold, which has already fallen from 115s. 10d. per ounce to the neighbourhood of 106s., improving beyond a chance 1s. is not regarded here as probable. The mining industry benefited from the troubles of the Empire when it got a big figure in currency for the gold, but thank goodness there is every chance that the country is now getting out of the mess, and there is every prospect that the purchasing power of sterling will continue to improve. Food prices were lower in February than they have been since 1918, while the index number for materials is now 161.2, as compared with 223·7 in December, 1918. Compared with the preceding month, food prices in February showed a drop of 19.2 points and material 21.4 points. There is a long way yet to go before we get back to 1913 prices, but even to oblige the Rand, I do not want to see prices back at the outrageous profiteering prices of the early months of last year, and unless that occurs there is not the slightest chance of the currency price of gold recovering to the level which then ruled for the metal. Gold has now become a commodity, and its price movements must follow the general trend of commodity values. My advice is sell the output as fast as it can be marketed, for presently the pound may be worth 4.86 dollars, when gold will be quoted at 85s. again.

LATEST PATENTS.

A SUMMARY OF RECENT INVENTIONS.

Among the new patents filed (from 207 to 317 of 1921) are the following:—

Frederick Chapman Gibson.—Improvements in recovering strands and wires of wire ropes.

Ingersoll Rand Co.—Improvements in throttle valves for drills.

Ralph Harper McKee.—Method of recovering precious metal from solutions.

Metropolitan Vickers Electrical Co.—Improvements in electrical circuit interrupters.

Calorn Amery Stevens.—Process for the reduction of ores.

Stephan Louis Cortlan.—A process for the treatment of petroleum oils.

Ivor Drolshammer.—Improvements in compressed air brakes.

John Hudson Hughes.—Improvements in buffer couplings.

Joseph Millar.—Improvements in means and apparatus for the development of power.

Wiebe Sjoerds de Boer.—A ventilating panel.

Wilfred Moraine.—Improvements in hammer drills.

Permanent Railway Tie Corporation.—Railway ties and rail fastenings.

Continuous Centrifugal, Ltd.—Improvements in vacuum filters.

Frank Humpheries.—A chemico-metalliferous process for the separation of precious metals from antimonial ores, concentrates, their scoriae and the like.

Arthur Gordon.—Improved means for the reclaiming of zinc from zinc, gold, slimes or zinc oxides

John Edmund Poisson.—Reciprocating engines operated by steam, water, compressed air, internal combustion, or other fluid pressure.

Eugene Beautiare.—An improved agglutinent for the purpose of manufacturing compressed coal agglomerates.

Alfred Cowen.—Improvements in and relatin gto the handlin gand bunkering o fcoal

Cornelis Robert Weavind.—An improved concentration for extracting precious stones, minerals, metals and other substances from alluvial soils by their specific gravity without the aid of water.

Letters to the Editor.

THE MODDER EAST POSITION.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—As one who is largely interested in the shares and debentures of the Modder East Company, I have naturally read your articles of the past three weeks with attention, but I cannot say that you have treated the company and its directors with any great sense of fairplay. More especially is the last paragraph of your article of to-day (2nd April), in my humble estimation, illogical in the mouth of the *Mining Journal.* You talk about "troublous history and nebulous prospects" and venture the opinion that the Modder East had better never been born. I am an 1889 pioneer, and have watched the rise and fall of a good many Reef companies, and think that you could not have selected a more unsuitable proposition than the Modder East for the rôle of the "unwanted babe." If that doctrine had been applied along the whole Reef during your lifetime of thirty years, I wonder where Johannesburg would be now? Certainly the people of the Far East Rand, who have benefited by the million or so of hard cash spent in its development will differ from you.

We are now, unfortunately, reaping the aftermath of the frenzied finance of the past five years, and purchasers of mealies at 25s. per bag, of wool at 5s. per lb., of Friesland bulls from £3,000 to £10,000 each, of farms at £20 per morgen, and of Modder East options at 15s., are all wondering whether or not it were not better that they, or their investments; had "never been born." And what about the investors in all the "promising" diamond ventures and base metal propositions of the last three years, which have received favourable notice in the columns of your widely-read weekly? You seem to have selected the most pessimistic sounding adjectives you can find in dealing with the Modder East, but I would like to know your opinion on the following essential points:

(1) Has the amount of over a million in cash spent on the development of the Modder East been entirely wasted?

(2) Is the ore reserve of over two million tons of 8 dwts. ore not as valuable to-day as it was (still undeveloped) in November, 1919, when the shares stood at 33s. 9d.?

(3) Are the prospects of the mine, when the Simmer Deep plant is erected, not as good as ever they were during the last two years?

(4) Are the mining costs, in view of falling prices, favourable legislation, and saving on transport to Apex, not likely to come down considerably in the next 18 months?

(5) Can any fault whatever be found with the technical lay-out of the mine? Is it not a fact that, profiting by experience of other Far East Rand propositions, the Modder Deep is one of the best laid out and ventilated mines on the Rand?

At the annual meeting on 7th December last the chairman said: "The mine promises exceedingly well, we hope shortly to secure a reduction plant of large capacity on favourable terms, and it only remains for us to get the money to ensure what we have every reason to hope will be a successful career." The money! "Ah, there's the rub." Times have changed and most people are having too much difficulty in paying for liabilities of the past to have money over for mining investments. But does that make Modder Easts worth intrinsically only 10s. per share?

Your sympathy with option holders is quite misplaced. A man who buys options rarely intends to exercise them. He merely gambles on the success of other people's investments by paying a marginal price. If the times go against him he should not squeal and, above all, should not ruin genuine investors by bearing the shares to half their intrinsic value.—Yours, etc.,

J. T. WOOD.

Standerton,
2nd April, 1921.

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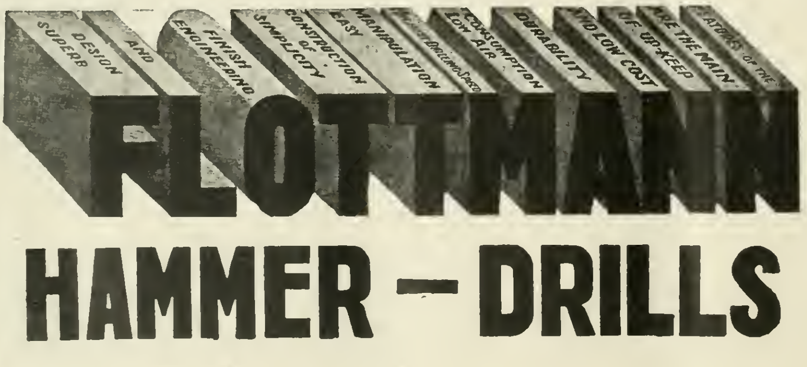

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The Week in the Sharemarket.

STILL DULL AND DEPRESSED—ENEMY SHARE HOLDINGS RUMOURS—CEMENTS DECLINE—RANDFONTEINS IMPROVE.

The market for the week has been dull and depressed. The various rumours afloat as to the disposal of enemy share holdings have resulted in nothing tangible, the latest being that the deal is "off altogether." P.P. Cements are weak at 46s. 9d. Modder Easts are slightly easier at 10s.; Debentures £103 15s. The only satisfactory feature of the market for the week is Randfontein Estates at 13s. 10d. buyers.

	Fri. 1st.	Sat 2nd.	Mon. 4th.	Tues. 5th.	Wed. 6th.	Thurs. 7th.
Anglo Am. Corp	20 3	20 0	20 0	19 6*	19 0	18 9*
Apex Mines	—	7 0*	6 9	6 9	—	6 9*
Bontjes Con.	4 3	4 4	4 4*	4 4	4 4*	4 4*
Brakpan Mines	50 0†	45 0*	45 0	45 0*	—	45 0*
Breyten Colls.	—	7 0†	—	—	—	—
Brick and Potteries.	—		—	—	4 6*	4 6*
Bushveld Tins	0 6*	0 6*	—	0 6*	—	0 6*
Cinderella Cons.	—		—	2 0*	2 3b	2 0*
City and Subs.	6 0*	6 0*	6 0*	6 6	—	—
City Deeps	40 6	—	40 0*	40 3*	40 0*	39 0*
Clydesdale Colls.	27 0†	24 0*	24 6*	25 0*	25 0*	25 0*
Con. Diamonds	13 9	13 6*	13 0*	13 0*	13 0*	13 6
Con. Langlaagtes	10 0*	10 0*	—	—	—	—
Con. Main Reefs	10 0*	10 3*	10 0*	10 0a	10 3	10 1*
Coropation Freeholds	0 10†	0 10*	0 9*	0 10	0 9*	—
Do. Syndicates	—	4 0*	—	4 0*	—	2 0*
Crown Diamonds	3 0*	2 7*	2 7*	2 6*	2 8*	2 9*
Crown Mines	—	40 0†	40 0b	39 0b	37 6b	—
Daggafontein Mines	3 0*	3 1*	2 9*	3 0*	2 9*	3 0
Durban Rood Dps.	2 6*	2 6*	2 6*	2 6*	2 6*	2 6*
E.R. Coals	1 9*	1 9*	1 9*	1 10	1 9*	1 9*
E.R. Deeps	—	0 7*	0 6*	—	—	—
E.R. Props.	4 9	4 6*	4 9	—	4 3*	4 0*
E.R. Debentures	—	—	£70*	—	—	—
Eastern Golds	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Frank Smith Dmds.	2 10	2 9	2 9	2 9	2 8	2 7*
Geduld Props.	46 9*	47 0	47 0	46 6	46 9	46 6*
Glencoe Collieries.	11 3*	11 3*	11 0*	11 6†	11 6†	10 0*
Glynn's Lydenburgs	7 9†	—	—	—	9 0†	—
Govt. Areas	78 3*	78 6	78 3*	78 0*	—	78 3*
Jupiters	3 4*	3 6*	3 6*	3 4*	3 5	3 5*
Knight Centrals	3 10*	3 10*	3 10	3 9*	3 9*	3 9*
Knights Deeps	14 0	14 0*	14 0*	14 0*	14 6	14 3*
Lace Props.	7 3*	—	—	—	8 0†	8 6†
Leeuwpoort Tins	6 6*	6 3	6 3*	6 3	6 3*	6 4*
Luipaardsvlei Est.	—	—	—	1 0†	—	—
Lydenburg Farms	4 6*	—	5 0†	4 6*	4 6*	—
Meyer and Charltons	—	85 0†	—	85 0†	85 0†	—
Modder B.'s	24 3*	26 0	25 6	24 6*	24 3	24 7*
Modder Deeps	41 0*	42 6	42 6	41 9	41 9	41 9*
Modder Easts	9 9	10 0	10 1½	9 9	9 10*	10 1
Do. Opts. (4 yrs)	0 3*	0 4*	0 3*	0 3†	—	—
Hume Pipes	—	—	—	17 6*	19 0†	19 0*
Natal Nav. Colls.	32 6†	31 0*	31 6	32 0†	—	30 0*
National Banks	220 0	—	230 0†	230 0†	230 0†	220 0*
New Eland Dmds.	17 0*	—	16 0*	16 0*	16 0*	18 0*
New Era Cons.	6 9*	6 9†	6 6*	6 6	6 3*	6 9†
New Geduld Deeps	1 3*	1 3*	1 3	1 3	1 3*	1 3*
New Kleinfonteins	5 3*	5 6*	5 6	5 6*	5 6*	5 6*
New Modders	65 0	65 0	65 0	64 9	64 0	63 0
Nigels	—	—	—	—	5 0†	—
Nourse Mines	—	—	7 9†	7 9†	7 3	7 9†
Premier Prefs.	105 0*	105 0*	—	105 0*	105 0*	105 0*
Pretoria Cements	51 6*	51 0*	50 3*	—	48 0	45 6
Princess Estates	0 9†	0 6*	0 6*	0 6*	0 9†	0 9†
Rand Collieries	—	—	—	—	—	1 6†
Rand Nucleus	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
Rand Select. Corp	46 0*	—	—	46 0*	—	—
Randfontein Est.	12 6*	12 6*	12 4*	12 6	13 0*	13 3
Roberts Victors	6 0*	6 0*	5 9*	6 10½	6 9*	—
Rooibergs	2 0*	3 2*	3 3	3 0*	1 2*	3 0*
Roode. Uniteds	0 9†	0 9†	—	0 9†	—	0 9†
S.A. Breweries	—	—	27 0*	—	27 6	—
S.A. Lands	4 1*	4 1*	4 3	4 1	4 0*	4 0*
Springs Mines	30 6*	30 0*	30 3	30 3	33 9*	30 0
Sub Nigels	11 6	11 6	11 6	11 9	11 7b	11 3*
Swaziland Tins	5 0*	—	5 0*	5 0*	5 6*	5 0*
Transvaal Lands	18 0*	—	18 0*	—	—	—
Trans. G.M. Est.	6 3*	—	—	—	8 3*	8 3
Van Ryn Deeps	—	70 3	70 9	69 6	70 0	—
Van Ryn Estates	—		—	—	—	70 6
Village Deeps	7 0*	6 0*	—	—	—	6 0*
West Rand Cons.	—	—	2 6†			—
Western Rand Est.	3 0†	2 6a	2 9	—	2 6*	2 6*
Witbank Colls.	42 6*	43 0*	43 0*	43 0*	43 0*	43 9†
Wit. Deeps	7 0*	—	—	7 3*	7 6	—
Wolhuters	4 0	4 0†	3 10*	3 10*	4 0	3 10*
Zaaiplaats Tins	2 9	2 6*	2 6*	2 6*	2 7*	2 6*
Union 5 per cent.	—	£96¼*	£96½*	£96½*	£96*	£96½*
New State Areas	20 0	19 3a	19 3	19 3b	19 9*	20 0*
Randfontein Cent.	—	9 0†	—	—	8 0*	8 3*
Rouxvilles	3 0	3 0	—	3 0	2 6*	2 9
South Van Ryns	3 3*	3 3*	3 3*	3 3*	3 0*	3 0*
S.A. Townships	8 6*	9 0†	8 9*	9 0†	8 6*	8 9
S.A. Alkalis	18 0	19 0	18 3*	19 0†	—	16 6
Do. Options	—	1 0	1 3†	1 3†	0 9*	1 0
Transvaal Silvers	22 9*	23 6*	20 6	23 6*	23 0*	23 6
Union Corp.	—	16 6*	16 6*	16 6*	—	—
West Springs	11 6	10 7½	10 9	10 6*	11 6	11 6
Do. Options	0 7	—	0 4	0 6†	0 3*	0 4†
Trans. and Del. In.	50 0*	—	50 0*	50 0*	50 0*	50 0*

Transvaal Silver and Base Metals, Ltd.

We draw attention to a notification in our last issue of an extraordinary general meeting of the shareholders of this company, to be held in the Board Room, General Mining Buildings, Main Street, Johannesburg, on the 21st day of April, 1921, for the purpose of confirming a provisional agreement between the Board of the company and the General Mining and Finance Corporation for an increase of its capital to £300,000. The sub-attached circular letter addressed to shareholders by the secretary fully explains the reasons for the proposed increase:

"In sending you the accompanying notice of an extraordinary general meeting of this company, I am instructed by my directors to place before you a summary of the reasons which have influenced the Board in entering into the provisional agreement referred to.

At the last annual meeting it was pointed out by the chairman that at the end of November, 1920, the company was committed to a liability of £88,400 in respect of advances made by the General Mining and Finance Corporation, Limited, and orders for certain necessary items of plant, and that it would take the full amount to be received from conversion of options into shares to provide for the extinction of these liabilities. It was indicated, furthermore, that, apart from our cash requirements for the comprehensive shaft-sinking and development programme which is being carried out, a considerable sum of money would be required during the current year for erection of the preliminary unit of the reduction plant.

In the meantime the company is being financed by the General Mining and Finance Corporation, Ltd., but the time has now arrived when it is desirable to secure the additional capital for the above scheme, and, in the opinion of your directors, the position and general prospects of the mine fully justify the proposed expenditure.

The amount which it is proposed to raise will be expended on shaft-sinking, development, rock drill equipment, and the necessary underground pumping and hoisting arrangements to enable this work to be carried out, and to provide a concentration and smelting plant capable of dealing with 4,000 tons of mine ore per month, together with housing, accommodation, etc. This plant, as you will observe, is of relatively small capacity, and is being erected primarily with the object of bringing the mine to a self-supporting basis as soon as possible. With comparatively small additional outlay the capacity of the plant can be doubled.

Pending erection of the concentrating portion of the plant, which should be in operation by about the end of September next, it is hoped to commence production, on a limited scale, with the new blast furnace which has recently arrived on the property, within the next three months."

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Tenders should be completed and returned not later than 10 a.m. on the 18th April, 1921.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS —EXPLOSIVES.

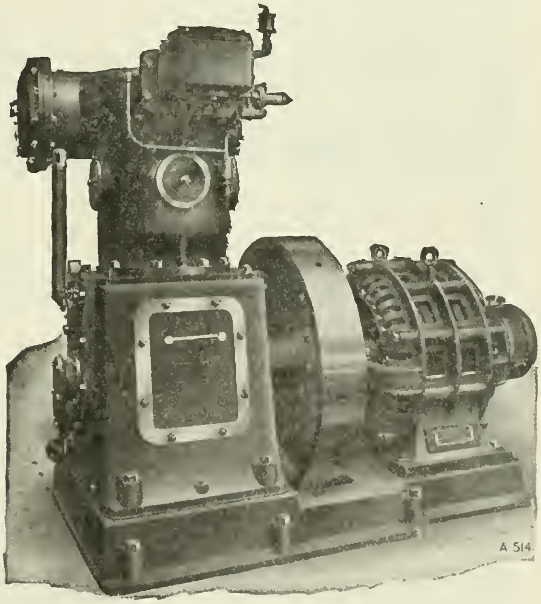
General Position.

The present month started well with fair inquiries for material. The coal crisis in Britain is viewed here in mining and commercial circles as of very grave importance. Should the strike unfortunately last weeks certain lines, in the absence of fresh stocks, would, of course, stiffen and the position in South Africa tend towards stabilisation—for a time, at any rate, to be counteracted later on. Those best qualified to judge do not, however, think the trouble will be of long duration. In the meantime a number of iron and steel works and blast furnaces have closed down, some of them probably for good, as they were being run at a loss and solely to keep workers employed. It may not be out of place to record here the opinion of one of our leading American importers on the general European position before the coal crisis in Britain occurred. The inability of Europe to buy, he said, will continue to be the major factor in the business situation for an indefinite period. Europe's curtailed buying power is directly reflected in the raw material markets in every country which is dependent on the European markets to any important degree, and indirectly in the export markets for manufactured products of every class. It is important in connection with the European situation, he stated, that the effect of the establishment of an export business on a long-time credit basis should not be misunderstood. In the face of the present shortage of capital the sale of raw materials on any other terms than cash or an exchange of commodities does not alter the immediate situation. It will require years to make up not only the actual capital destruction which resulted from the War, but also the loss in capital accumulation and the disorganisation of productive activity which resulted from it. It is difficult, he said, to conduct business at a profit in a period of sharply-declining prices. Big declines in commodity markets, he thought, were past, except in the case of iron and steel and a few other lines where the full forces of readjustment have not yet been felt. In conclusion, he said it was time we fully realised that the period of semi-speculative business in staple lines has passed; the machinery of trade must be readjusted to more normal price levels.

Iron and Steel.

The month has started fairly well, inquiries for material being good. The coal strike is naturally looked upon as very serious, as several works have already closed down and others may be forced to do so should the conflict be of long duration. Importers think that this oversea condition will strengthen prices here, as in the absence of importations prices are bound to rise.

Latest quotations are:—Imported iron and steel: flats, smalls 40s. to 50s., larger sizes 38s. 6d. to 55s.; ¼in. rounds, iron and steel, 69s. 6d.; 5/16in., 62s. 6d., ⅜in. iron, 58s. 6d.; steel, 41s.; 7/16in., 44s.; ½in. and ⅝in. round, iron 32s. 6d., mild steel 43s.; ¾in. iron and steel, 42s. 6d.; ⅞in. to 2in. iron rounds 39s. 6d., larger sizes in iron 52s. 6d.; 1in. to 3in. mild steel 41s., larger sizes 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s 6d.. larger sizes 45s. to 52s. 6d.; square mild steel, ⅝in. 41s. 6d., 1¼in. to 3in. 40s., larger sizes 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d. to 47s. 6d.; shafting, 3/16in. 1s. 2d., ⅜in. 1s. 1½d., 7/16in. 1s. 1d., ⅝in. 10¾d., ¾in. 10¼d., 1in. 9½d., 1¼in. to 2in. 8½d. to 8¾d., larger sizes 7½d. to 8d.; spring steel, flats, 8½d. to 9d. per lb.; mild steel plates, 1/16in. 42s. 6d., ⅛in. 41s. 6d., 3/16in. 40s., ¼in. 37s., 5/16in. 36s., ½in., ⅜in., ⅝in., ⅞in. and 1in. 35s. to 44s.; bolts and nuts, ⅜in. 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d. per 100lbs.; ⅝in., ⅝in. 36s., ¾in. 64s.; nuts, ⅝in. and ¾in., 87s. 6d.; fish-plates, bolts and nuts, ⅜in. 1s. 4d., ½in. 9½d. per lb., ⅝in. 72s. 6d., ¾in. 68s. 6d. per 100lbs.; dog spikes, 43s. per 100lbs.; rivets, ¼in. 1s. 3d. per lb., ⅜in. 10d., ½in. 64s., ⅝in. 60s.; tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜in. round 1s. 10d., ½in. 1s. 8d., ⅝in. and upwards 1s. 6d. per lb., ½in. 1s. 9d., ⅝in. and upwards 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 6d. per lb.; drill steel, 7½d.; hollow, 1s. 0½d.; solid drill steel. 6d. to 6½d.; wire nails, 50s. to 65s.; shovels, 65s. to 75s.; wheelbarrows, 67s. 6d. to 75s.; picks, 45s. to 75s.; pick handles, 35s.; barbed wire. 33s. 6d. to 42s. 6d.;



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galvanised iron piping, 1in., 6d. foot; Dunswart, 33s.; Union Steel Corporation, small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d. Piping and fittings: galvanised iron, new, 1in. 1s. 1d. per foot; 1½in. in black, new, 2s. foot; 3in. to 12in., 3s. to 11s. 6d. foot. Baling wire from 30s. per coil.

In the engineering shops the commencement of the month has brought in some fairly good orders, but they are not overwhelmed with work. Some engineering firms are hoping to do good business in the future in the manufacture of certain builders' requisites in the gun-metal line, more especially in the better-class articles. There is a fair amount of building going on at present—the Eloff Street branch of the Standard Bank, University, Chamber of Mines, etc., whose requirements are probably already met; but there is a demand now for the better-class article locally manufactured. The Exchange Engineering Works showed your representative a particularly interesting lot of window and door fasteners and other fastening devices which they have patented; these have been very favourably commented upon by leading architects.

The sale to a local syndicate of the bulk of the remaining plant and machinery of the Knights Deep has been announced at £70,000, which will relieve the shortage experienced on the part of second-hand iron and timber yards. This is the biggest second-hand deal in machinery known here.

The coal strike in Britain has already caused the closing down of several blast furnaces and the stoppage of the Bell-Dorman group of iron and steel works, which are one of the largest steel-producing combines in the country.

Timber and Building Materials.

Business has been quiet this week. Prices are much the same as they were, but the tendency is undoubtedly towards lower levels. 3 x 9 deals are 1s. 7d. to 1s. 8d.; scantlings, ditto, beaver board, 5d.; floorings, 10d. to 10½d.; ceilings, 7d. to 7¼d.; corrugated iron, 24 gauge, 11d. to 1s., with little business. Japanese oak, 1s. 10d. to 1s. 11d. per square foot; Burmah teak, 23s. 6d. to 24s. 6d.; American oak, 1s. 9d. to 1s. 10d.; 1in. boards, 24s. 6d. to 25s.; American black walnut, 1s. 9½d. to 1s. 10d.; West African mahogany, 2s. 2d. to 2s. 4d. per square foot. In the second-hand iron and timber yards business is fairly good; timber is going at 1s. 2d. and iron at from 6d. to 8d. Quite a lot of material has come on the market during the past fortnight, including stuff from the Knights Deep, New Heriot, City and Suburban, etc. Stone bricks, all blue, are ruling at 70s. delivered; mixed bricks, 60s. delivered; wire cuts, £4 10s. to £5 per 1,000 at the kiln; pressed bricks, £5 at the yard. Blue lime, 4s. 3d.; plaster, 5s. 3d.; cement, 11s. 6d. per bag; chimney pots, terra cotta, 10s.; 18in. chimney pots, 12s. 6d.; concrete columns, 6ft., 25s. delivered. Mining and builders' patent double-lug reinforced buckets, 10in. to 14in., 10s. to 14s. each. Damp course and roofing, 1 ply, 40s.; 2 ply, 52s. 6d.; 3 ply, 65s.

Electrical Goods.

Dealers report that business after the recent spurt is now quieting down, and orders are not coming in too freely from outside. Tubing is still on the down grade and selling to-day at from 20s. to 25s., as against 32s. a month ago. Screwed tubing is also declining and being released at about 38s., as against 45s. a short time ago. The tendency is for prices generally to go down, as merchants with heavy stocks and consignments coming along necessarily have to realise at best.

Explosives.

In view of the coal strike in Britain and the consequent dislocation of business, it is well to know that the local explosives factories have large stocks on hand—sufficient, at any rate, for six months.

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Our Coal Trade.

In the Assembly, on Wednesday, the Minister of Railways was asked by Mr Munnik (1) Whether, in view of the serious coal crisis that has arisen in England, the Government was aware that the Union of South Africa was getting a second chance to secure its share of the coal supply in the Southern Hemisphere. (2) Whether the Government was prepared to meet any sudden rush on the country's coal supply for export trade. (3) Whether the question of the supply of trucks had now been definitely settled. (4) What steps had the Government taken to prevent coal prone to spontaneous combustion from being sold for shipping purposes. (5) Whether the Government had taken steps to foster this coal trade and keep its finger on the pulse of the industry, and not allow it to slip from their reach a second time. (6) Whether, in view of the importance of the matter to the Union of South Africa at the present period of financial depression, the Government would consider the advisability of securing a technical man with special knowledge of the subject and freed from departmental control, to take charge of the coal export question.

In reply, the Minister (Mr. Jagger) said: (1) The position in Europe is being carefully watched, and the whole question of the coal export trade is at present engaging the attention of the Government. Only that morning the Board had arrived at a decision to reduce the rate for the carriage of bunker coal to the ports of Durban, Delagoa Bay and Capetown by 6s. 6d. per short ton and 7s. 3d. per long ton, and this has been communicated to the coal owners, so that they may be in a position to take advantage of any demand which may occur. (2) Yes. (3) It is not clear what the hon. member has in view. The truck supply is being augmented as rapidly as deliveries can be obtained. (4) These matters have recently been investigated, and will in due course be reported upon by the Coal Commission. (5) The hon member appears to be under a misapprehension as to the position which has arisen in the coal trade. It has all along been, and will continue to be, the policy of the Government to foster the coal trade. (6) It is not clear what the hon. member has in view. The coal export trade is not controlled by the Government, but the question of the regulation of exports in conjunction with a grading scheme has been under consideration, and will no doubt be reported upon by the Coal Commission.

In Reuter's telegram Mr. Munnik's fifth question has been omitted.

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GOLD CERTIFICATES STATEMENT.

A statement under the provisions of Section 6 of Act No. 31 of 1920 of the gold certificates issued, redeemed and outstanding, and of the gold held for redemption of the certificates on Saturday, the 26th March, 1921, is published in the "Gazette":—

Gold certificates issued up to 19th March, 1921 ...	£8.459,000
Gold certificates issued during week ended 26th March, 1921	Nil.
	£8,459,000
Gold certificates redeemed	91,933
Gold certificates outstanding at 26th March, 1921	£8,367,067
Gold held for redemption of certificates on 26th March, 1921	£8,651,117

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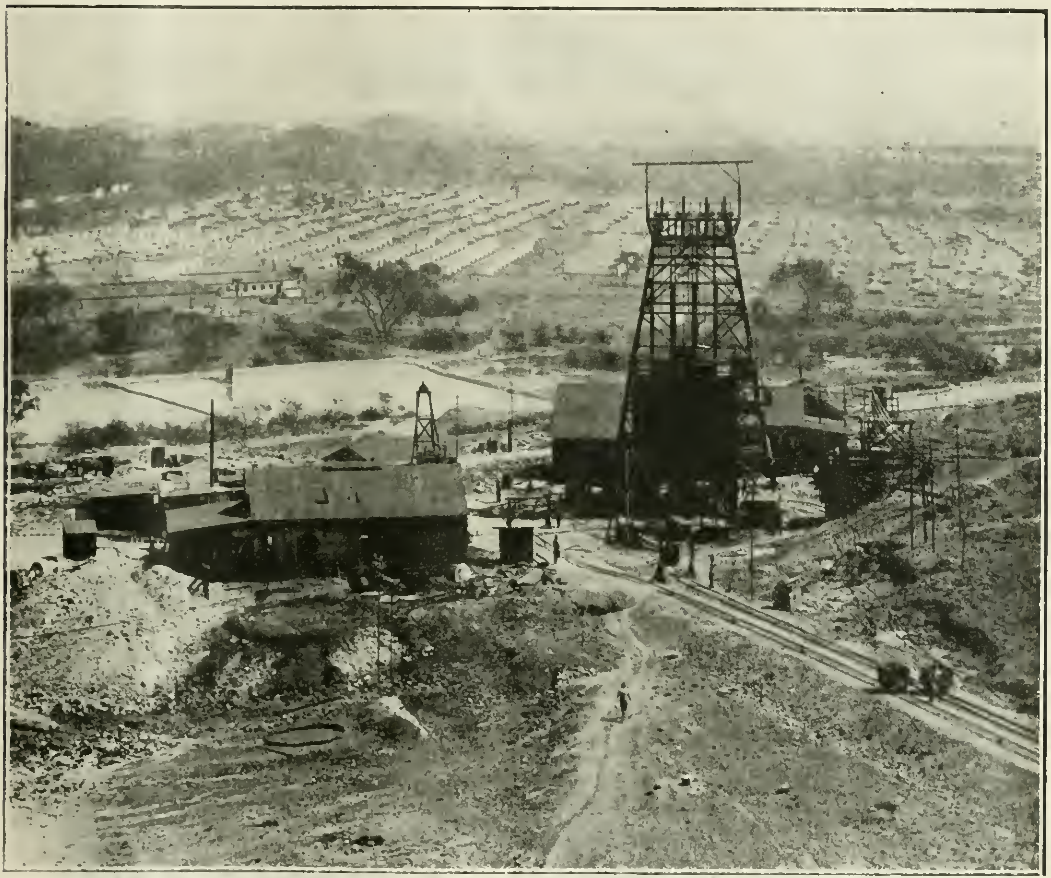
Vol. XXXI., Part I] JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 16, 1921. [No. 1542.

A Leading Rhodesian Mine—The Falcon.



The last monthly declaration of output issued by the Rhodesia Chamber of Mines showed that Charterland recorded a bumper mineral output in respect of February operations. The greater part of this, however, was made up of adjustments for gold and asbestos. Things in the Rhodesian mineral industry are not quite so roseate as this record return paints them. There are, for instance, fears that the Falcon mine, one of the largest propositions in the country, will have to close down. The matter is commented on elsewhere in this issue.

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Selective Mining on the Rand.

A PROBLEM OF MANY COMPLEXITIES.

THE MATTER RECONSIDERED IN THE LIGHT OF THE PRESENT POSITION OF THE GOLD INDUSTRY —HOW THE "PREMIUM" AFFECTS THE QUESTION—CASES OF THE NEW MODDER, MODDER EAST AND DURBAN DEEP—IMPORTANCE OF LARGE RESERVES OF ORE—SOME PROS AND CONS OF SELECTIVE MINING—MAXIMUM PROFIT IN RELATION TO AVOIDANCE OF FLUCTUATING RETURNS.

Few questions of technical policy in mining have engaged more attention than that of selective mining and few subjects relating to mines are so misunderstood by the great bulk of shareholders as is this complex and difficult problem. The subject is of special moment to the Rand at the present and in the following article some aspects of selective mining are put forward with a view to eliciting discussion of the matter.

Reference recently made in this journal to the recovery values obtained by the Modderfontein East Company at the Apex Mill in relation to the average value of the ore reserves of that company tends to redirect attention to the subject of selective mining. This important matter was much debated a few years ago, but in the light of present-day conditions it will be well worth while to re-examine the subject.

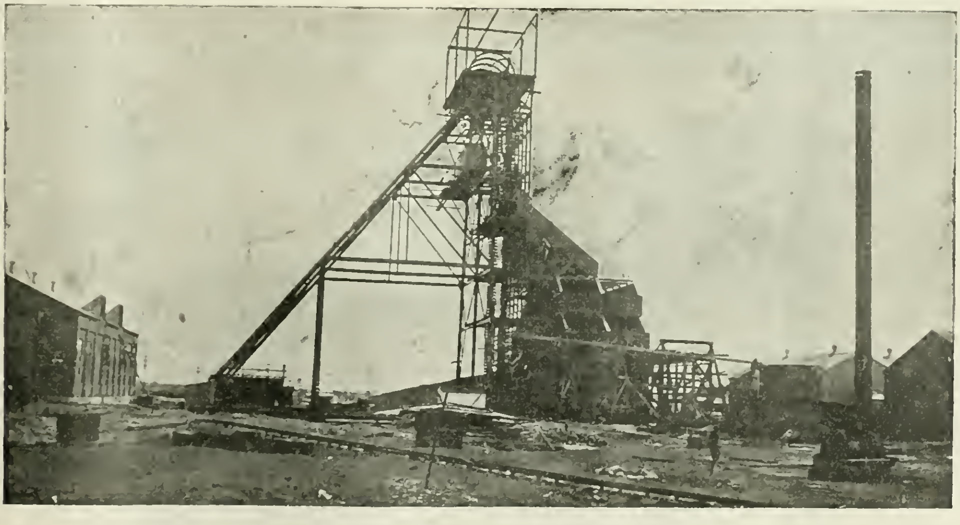
Discussion with Authorities.

Within the past few days we have discussed selective mining with several mining engineers, and in view of the present abnormal circumstances of a fluctuating premium for the selling price of the product and an inflated cost of working it will be interesting to review the cases for and against selective mining. Admittedly, there is a great deal to be said in favour of selective mining—in other words, making hay while the sun shines. Unfortunately, however, that such a policy has been pursued is not generally recognised. As. Mr. H. S. Denny wrote in the "Mining and Scientific Press" in reply to an article written some years ago to that paper by the present Editor of the "S.A. Mining & Engineering Journal." Selective mining is a complicated question, and, unless its application is expressed in figures, it is difficult to follow any argument closely. All mining is more or less selective, within limits, and it is only a question of the degree that really calls for criticism.

Dealing with a hypothetical instance in which a mine contains only a limited quantity of high-grade (2 oz. rock), Mr. Denny, in his thesis on the subject, remarked: The advocates of selective mining would then proceed to deal only, in the first place, with 5,000 tons of 2 oz. rock. If this could be done, maintaining an average working cost, such as could be realised in taking merely average-grade ore and working on some scheme of concentration in the mine, then there would undoubtedly be a great deal to say in favour of it from a present-value standpoint.

Selective Mining v. Working Cost.

But what would happen? In order to mine only this grade of ore, work would have to be conducted on every level in the mine. Tramming, shovelling, skip-filling, lighting, air-lines, rails, etc., would all have to be maintained at each of these points, from which only very small quantities of ore would be taken. The supervision would have to be out of all proportion to the tonnage, seeing that the points of attack would be so far apart, and from every conceivable working condition aspect, the result of such policy must be reflected in abnormal cost. It is in this that the danger of the policy lies, as the only offset to this inflated expenditure is the interest obtainable on the larger amount realised per ton of ore handled. It is too complicated a matter to deal with in figures in an article of this kind, but I have made many calculations on hypothetical cases, and it is not difficult to postulate a case where persistence in such a policy might rob a mine of 50 per cent. of its potential

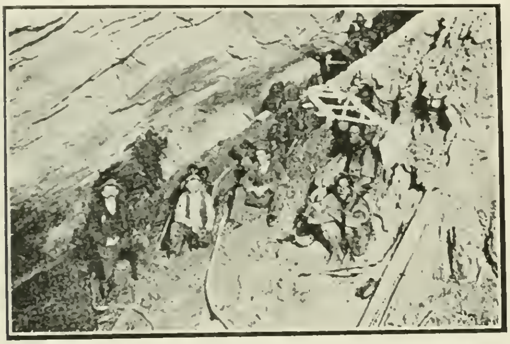


The Rand's Case for Selective Mining. A Typical Deep Level Shaft.

profit. Contrariwise, however, it can be shown that the opposite policy of including worthless rock with the higher-grade ore may be followed to equally disastrous limits. In fact, the whole problem of the limitations of selective mining rests in the factors of grade of ore vis a vis concomitant operating expenses, it being axiomatic that the more selective the mining the higher the working cost. In almost every form of mining, however, a certain amount of selection must be followed. It is in determining correctly the economic limit of the application of the principle that the capabilities of the administration will be shown. It is quite certain that there are mines where a straightforward policy, practically devoid of all selection, will show the best economic result, while there are others that could only be made to yield profits by sticking closely to that policy. It is absurd to generalise, and until a specific case is taken, it is quite impossible to have any view one way or the other.

Case of the Modder East.

Let us take the concrete case of the Modderfontein East. This company is at present operating on a slender crushing basis of only 25,000 tons per month. But it is obvious that the company with its very large claim area cannot expect to secure the most economical results by employment of the Apex battery and treatment plant. Were the company in a position to re-erect the Simmer Deep-Jupiter equipment and to crush 45,000 or 50,000 tons per month working costs, theoretically at any rate, would be substantially lower than they are at present when gold producing operations are proceeding on a basis utterly unrepresentative of the company's potentialities. Moreover, transport from the mine to the ore bins at the Apex constitutes a further abnormal charge against the company's revenue.



In a Rich South Reef Stope.

The Functions of a Consulting Engineer.

Subject to certain qualifications which will be dealt with later on, it is axiomatic that the essential function of the consulting engineer or superintending engineer of a mine is to earn for the shareholders who employ him a maximum profit and to earn such profit in a minimum of time provided that extraneous industrial and political considerations such as maintenance of occupation for employees in the interests of the community generally are not allowed to camouflage the province of the technical direction, and we will assume, too, that a mine is worked honestly in the best interests of shareholders and not with a view to stock market fluctuations.

The Case for Selection.

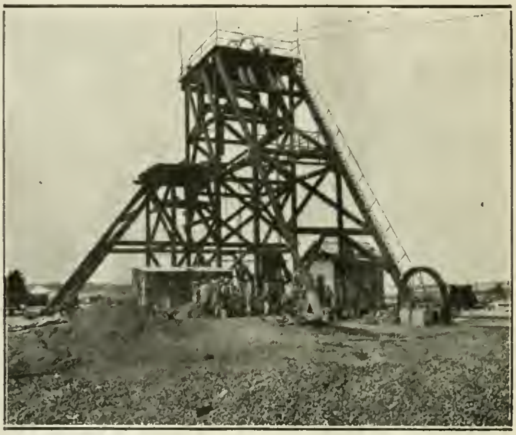
Granted these premises, then it will be patent that within certain limits it will be good policy from the point of view of the shareholder who thinks only in terms of dividends for the management to adopt the policy of attacking, whenever and wherever possible, the richer parts of any mine, regardless almost of everything. The argument made in favour of this policy is that the ultimate profit made is greater because of the compound interest factor. In the case of the Modderfontein East it would, particularly, appear to be sound policy to mine and crush the best grade of ore which has so far been blocked out in the mine. The company is in dire need of money and having regard to its financial requirements and the inadequate and costly methods of ore crushing and treatment at present employed it would only further endanger the future of this much debated concern if the management was to adopt a policy of crushing rock from the poorer or average grade stopes only.

Modder East Recoveries and Reserve.

The point, however, which we desired to make clear in our article of a fortnight ago was that if extensive tonnages of good ore do not attend the development of the Modder East in the near future the ore reserve position will suffer. All the same, under existing circumstances, the management of the company would appear to be thoroughly justified in carrying selective mining considerably further than they have done. In this connection, the incidence of sorting has, of course, to be taken into account.

Selective Mining and the Durban Deep.

To take another specific instance, we should be inclined to say that selective mining would be justified in the case of a property like the Durban Roodepoort Deep. Here is another property which is being operated on a small milling basis. Efficiency at this property is poor and operating charges are naturally high, but the continuity of good values in depth and the high percentages of payability secured are most encouraging features and we should not be surprised if at some time in the future the Durban Deep proved itself to be an earner of substantial profits. But that position can only be attained by a very substantial augmentation of the productive plant which, of course, infers the expenditure of large sums of money on a greatly extended programme of development and on the acquisition of a great deal of new plant. The present does not, however, present a favourable opportunity for raising large sums of money for the Rand gold mines and until such a time arrives it would be unsound policy for the Durban Deep to mill ore which is not of the best grade obtainable.



Selective Mining: Another Rand Headgear.

Another Aspect of the Problem.

It may, of course, be contended that it would be policy to reserve the best ore in all mines until lower working costs and greater efficiency admit of a maximum profit being earned out of an ounce of gold. The subject is a very debateable one and requires a close consideration of many complex and fluctuating economic factors which are almost impossible of close determination. The incidence of the gold premium must not, for instance, be lost sight of. We are inclined to the view that it might very easily be proved that the maximum profit from a reserve of ore of varying values could be obtained by intensifying selective mining at a time when the price of gold is at its highest.

Incidence of the Premium.

In other words, the peak of grade should correspond with the peak of the premium and when gold is being bought at £6 per oz. a rich mine like the New Modderfontein, with enormous reserves, should work its richest stopes and dispose of as much of its output as possible on the best market.

Regularity of Output.

But ultimate profit is not the only objective—there are other weighty considerations. Steadiness of output, for instance, is desirable in mining, and the only way to arrive at anything stable in this direction is by creating reserves of the higher grade of ore. All mines vary in some degree in the distribution of their mineral value, and, in consequence, all mines will have their phases of lower and higher grade ore periods of development. If a mine has two or three years ore-supply developed ahead of its mill, it is not difficult to regulate, within fair limits, the average output, seeing that the grade can be modified from time to time, as dictated by the results of current development. That is to say, if new development continues to show a better grade than the average of the existing ore reserves, then an increase in the grade milled might be allowed; whereas, on the contrary, if new development continues to show poorer average results, the grade of the current ore being milled might be correspondingly reduced. In this way a steady level of returns can be maintained and shareholders and directors can look forward with considerable certainty to the immediate future, and two or three years beyond that.

A Scene at the Shaft Head during Sinking Operations.

Effect on Share Values.

On the other hand, if a policy of selective mining is to be followed, where the richest ore is always to be taken out as soon as discovered, and sent to the mill, regardless of everything, there must be undoubtedly violent fluctuations in the returns, and considerable uncertainty as to the value of the company's shares and its future. Furthermore, as already stated, operations under such conditions cannot possibly be carried on as economically as in the other case, and it is not at all improbable that the advantage and interest obtained by getting the returns from the higher-grade ore early into the bank, under this system, would, in many cases, be more than offset by the corresponding increase in the operating costs entailed. It should not be impossible, at a given time, to figure what the most profitable limit of selection should be, but it might be stated as a general truism that if the principle is adopted, merely with the idea of rushing those points where the best ore appears, regardless of other factors, it must prove to be economically unsound, as there are probably some occasions when the working of lower-grade ores simultaneously with some of the higher-grade ores will yield a joint aggregate profit that could not be arrived at by selecting first the higher-grade ore and finally going back to the lower.

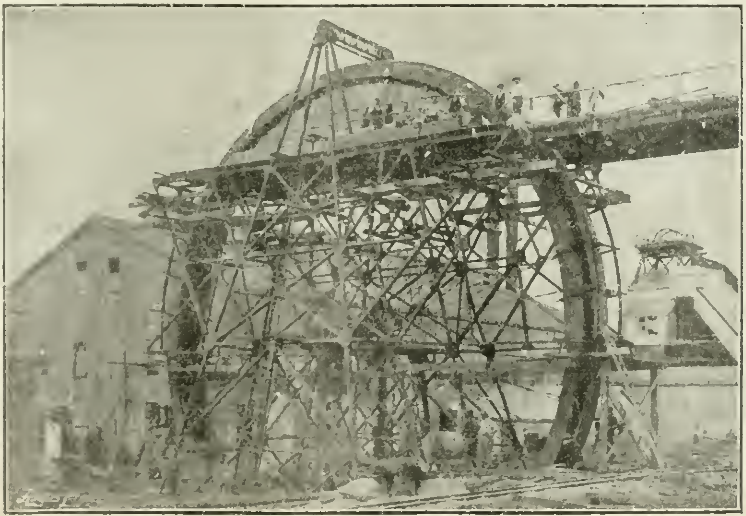
An Essential Condition.

The first postulate of selective mining then is possession of a large tonnage of ore in reserve. Neither the Modder East nor the Durban Deep have any very large reserves of ore to support a policy of selective mining if indulged in for any length of time, but in the case of each of these properties there are exceptional circumstances which would appear to justify selective mining at the present time if the practice is kept within reasonable bounds. The New Modderfontein Mine has, under sound technical management, shown substantial and progressive advances in profit during recent years. And thanks to a far-seeing development policy the general stability of the property has likewise shown yearly improvement.

Case of the New Modder.

The position of this company is so sound that we consider it could substantially have augmented its profits during recent months by milling the highest grade of ore contained in the mine during the period when gold was at its highest and that the company could have done this without sensibly deteriorating its ore reserve.

Larger fluctuations in profit might, however, have followed and the question is whether the general public, the lay shareholders, with their not very thorough understanding of the essential principles and numerous complexities of the subject of selective mining, would not have criticised the Board if such an action had been taken. The whole subject, it must be admitted, bristles with difficulties. It has been closely examined by numerous competent mining engineers, mathematicians and economists in the past, but we should like to hear from readers on the matter. Selective mining will certainly bear a great deal more discussion.



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POSITION IN THE WITBANK COAL FIELD.

NEWS FROM THE MINES—THE CENTRAL MINING AND LEWIS & MARKS PROVING NEW COAL AREAS —WITBANK'S BY-PRODUCT PLANT—CORONATION COMPANY'S NEW COLLIERY AT ARNOT—THE BIG BAILEY INTERESTS—T. & D.B. OPENING UP A NEW PIT—THE MIDDELBURG STEAM AND THE STATION COLLIERY.

As with other commodities South African coal witnessed a steady advance in price last year. It also saw an expanding production. And then, as in the case of most other things which are bought and sold in this chaotic and war-riven world, the peak of prosperity was reached, and in response to the conditions of world trade generally the output began to decline. Overseas customers became not quite so numerous or enthusiastic about the merits and comparative cheapness of South African coal, and in the face of increased railway rates and a marked diminution in the number of ships riding at anchor in Durban Harbour and Delagoa Bay, the coal trade of the Union has of late months fallen off materially.

The position is fundamentally sound. The initial cost of production of coal is lower in South Africa than in any other large coal-producing country, and it is probable that one effect of the coal strike in Europe will be that more shipping will coal at South African ports.

With a view to securing information for the forthcoming special coal number of this journal, a special commissioner visited the Witbank district a few days ago, and in the following article some details of the present position in the Witbank coal area are given. These particulars will of course be greatly amplified in our second coal number.

Two new potential producers in the Witbank field are the Schoongezicht Collieries on the farm Schoongezicht No. 508, close to Brugspruit station, and the farm Wolvekranz, situated at some distance from the railway line. A colliery is now being opened up on the first-named property by Messrs. Lewis & Marks, and on the latter farm the Central Mining and Investment Corporation have proved the existence of a valuable coalfield by means of boring.

Busy Witbank.

The Witbank Colliery is now equipped for a production of 120,000 tons per month, but the output is naturally conditional by the volume of the demand, and at the moment of writing this is not particularly brisk. The company is pushing on with experiments in connection with the recovery of tar and by-products. The valuable research work being conducted here has now reached a very interesting stage and the company is erecting new plant for the recovery of by-products from waste coal and for the breaking down of the coal into the various complex substances recoverable. An expert from England has been in charge of these operations for some time past and interesting developments are anticipated.

* * * *

The Coronation Collieries Company has almost exhausted the coal contents of its original mining area. The company is now commencing to "rob" the property of its pillars, and it is expected in about eighteen months' time that the Coronation, which has proved itself to be one of the most profitable coal-producing ventures in the Middelburg-Witbank area, will have ceased production. The directors of this property have, however, with commendable foresight made provision for maintaining the company's output. Some considerable time ago the company acquired a very large holding in the Tavistock Colliery, and more recently they have opened up a new colliery at Arnot, on the main Pretoria-Witbank-Delagoa Bay line, about 20 miles beyond Middelburg and approximately 40 miles from Witbank. The primary object of this colliery will be to maintain, in conjunction with the Tavistock Colliery, the output of the Coronation Company. It is anticipated the output from the old Coronation pits will begin to diminish appreciably about the end of the current year, and by the end of 1922 this property, it is calculated, will have become non-productive.

At the New Bailey Shaft of the South African (Witbank) Collieries.

The Coronation output has been as high as 46,000 tons in a month, whilst that of Tavistock during the period of brisk demand reached 26,000 tons. The capacity of the two collieries is quite 80,000 tons per month, and the policy of the board is to take steps to augment the production from the Tavistock pits and simultaneously to bring the new Arnot property to the productive stage. Electrical coal-cutters of the Jeffreys type are now being installed at the Tavistock Colliery with a view to increasing output, and at Arnot a fair amount of development work has been carried out in the coal seam, which averages about 15 feet in thickness. The company proposes to work 10 feet of this. The coal at Arnot is of good quality, and it is considered probable that an output of as much as 60,000 tons per month will eventually be attained at this new colliery. The coal on the Arnot property, as at most places in the Witbank-Middelburg area, lies at a shallow depth, and an incline shaft has been cut into the seam. A branch line is now being constructed from the main railway to the property, and the colliery will be equipped in the near future. A good deal of the plant at present erected on the old Coronation property will doubtless be utilised in equipping the new colliery, but inasmuch as the company has secured options over numerous other coal-bearing farms in this locality, the ultimate fate of all the original equipment is still undecided.

* * * *

One of the largest coal propositions in South Africa is that which recently has been formed under the auspices of that ubiquitous and enterprising financier, statesman and sportsman, Sir Abe Bailey. The concern in question is now known under the comprehensive title of the South African (Witbank) Collieries, Ltd., and it embraces the coal mines situated near Blackhill station, immediately to the west of Witbank, which were formerly known as the Anglo-French Navigation Estates, subsequently termed the Transvaal Navigation and the Cassel Colliery Company's Landau pits. Early last year the old Navigation plant was destroyed by fire, and of recent months a great deal of reorganisation work has been carried out. The plant at the Bailey shafts will include three picking belts, and at the Navigation four belts. Efficient ventilation at the Navigation pits is to be secured by means of a Capel fan, formerly employed on the Welgedacht mine.

In all four new shafts have been located. Two of these new shafts have been sunk one and a quarter miles north-west of the old Anglo-French shafts. These two shafts, which are known as the Bailey shafts, were started on May 8th, 1920. The air shaft and main shaft are arranged so that coal can be drawn from both. In about a year's time the development from these shafts will connect up with the old workings, and both of the new shafts will then be employed on hauling coal, and the original air shaft with a fan will then become the ventilating shaft. At present the company is despatching about 500 tons per day from the new Bailey pits, but the capacity of these shafts will be anything from 40,000 to 60,000 tons per month.

THE WITBANK COMPANY'S TAR AND BY-PRODUCT PLANT

The Bailey shafts strike the coal seam at a depth of 247 feet. The shaft collars are secured by reinforced concrete down to the solid rock bottom. The seam in the Bailey section is 6 feet thick, and this is at present the only seam being worked. There are, however, three workable seams. In addition to these two shafts named after the presiding genius of the company, two other shafts have been located to the east of the old Anglo-French Colliery. These pits are known as the Navigation shafts. At this point the coal lies at a somewhat greater depth than in the Bailey shafts.

At the time of our commissioner's visit only one shaft, which will be temporarily employed as an air shaft, had reached the coal horizon. The main hauling shaft had been collared and secured with reinforced concrete and timber, but sinking had been postponed pending the arrival of the new steel headgear, which is being supplied from Johannesburg by Messrs. J. & R. Niven. The layout at the new Navigation pits is very similar to that of the Bailey shafts, i.e., whilst one shaft is to be temporarily employed as an airway, both pits have been sunk with a view to hauling large quantities of coal through them in the future. In addition to this a considerable quantity of coal can still be won from the old Anglo-French workings, and the Landau Colliery of the former Cassel Company is capable of supplying a substantial tonnage for a good many years to come. Taking everything into account there would appear to be ability to produce a million and a half tons a year from the pits of this Cassel-Anglo-French amalgamation, and if the demand warranted it these united collieries could no doubt, by dint of effort, produce even two million tons per year.

* * * *

The Middelburg Steam Coal and Coke Company is understood to have acquired the Station Colliery at Witbank.

* * * *

The Transvaal and Delagoa Bay Investment Company is opening up a new colliery about two and a half miles from the existing pits. The new coal mine will have a capacity of about half a million tons per annum.

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.
SURVEYOR'S CERTIFICATES — March, July and October (Extra) Exams 100 %, 50 % and 66 % respectively of S.A. total.
MANAGER'S CERTIFICATES. — Two last Exams. (Sept., Jan.) 17 out of total 23 in S.A.
OVERSEER'S CERTIFICATES.—Two-thirds of the S.A. total for year 1920. 75 % for January, February, March, 1921.
COAL CERTIFICATES.—Candidates being enrolled
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

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More Barberton Memories.

RECOLLECTIONS OF THE DE KAAP GOLD FIELDS BY ANOTHER PIONEER—PROSPECTORS & THEIR METHODS—GOVERNMENT ASSISTANCE REQUIRED—WHY NOT A PROSPECTING BANK?

The interesting article on Barberton which appeared in our last issue has revived memories of this once famous mining field amongst many pioneers, and we are glad to publish hereunder a contribution from another old timer on this area. Our correspondent writes of the De Kaap prospectors with a knowledge gained by several years residence in the Barberton district, and he makes an eloquent plea in this article for Government support for the prospector and small mine worker. We have a generous Land Bank to help farmers—why not a Mines Bank to assist the struggling prospector?

The photo of the discovery of the Sheba Mine in your last issue must have brought memories of the old days to many of your readers—memories of camp fires and tall yarns. Were the men of those days different from the men of to-day? Does the lure of the town and the steady wage keep them in its thrall? What strong, hardy, independent men these old prospectors were! How courageously they took the good with the bad and kept on smiling! And what amazing luck some of them had! Of one old hand it was said that when he came into "camp" and blew in the proceeds of his last find he had only to take a bottle with him and get out on the veld. When he awoke sober in the morning he would find he had been sleeping on a reef going ounces!

A prospector I knew used to go about breaking off samples from every likely reef or stone he saw, coming home in the afternoon loaded up like a pack donkey to where he was camping. He would crush and pan most of those samples the same evening. In one case a sample went very rich, but he was careless and had forgotten the locality. He haunted the vicinity for weeks, but to this day that reef has never been re-located.

The Pschology of the Prospector.

Some were quite methodical in their work and had wonderful memories. They could go back years afterwards to where they had located gold, if for any reason it did not suit them to disclose it at the time. Many were very reticent about their finds although they knew of many good things, but they were always waiting for the good times till they could sell or start on their own or till some one would turn up and give them a decent price for their discovery. Many have passed into the Great Beyond taking their secrets with them, and Barberton peaks stand up silent and inscrutable and keep their secrets. With the writer of last week's article, I have often wondered how many more Shebas and Zwartkoppies those hills yet con-

A Group of Eastern Transvaal Pioneers.

tain. *Apropos* of the above, I had the privilege of doing a kindness to one of these old hands. He was very ill and knew his end was near. Before leaving for hospital he called me aside and told me that in return for what I had done he wished to tell me something important—that in a certain place which he minutely described he had found very rich gold reef. When he discovered this reef he had no money to peg and hold, so he covered up his work and remained silent. A " rush " took place over another find in that locality and his reef was covered by the pegging. That ground was held by people for twenty-five years off and on, and those people he knew were not likely to give him much recompense for his information. He was never one of the lucky prospectors and preferred going to the end very poor rather than disclose his find to the Johannesburg financial sharks as he called them.

Then there was the other type of prospector, the one who knows all there was to be known of all reefs, and his own in particular, who insisted on your sampling the reef to his orders, which needless to say was the part (sometimes the only part) carrying payable gold, and if one wished to take an option over his ground would have a clause inserted that he —the prospector—should have full control and direction of affairs.

Recollections of the Eastern Transvaal.

The greater part of the prospecting of the Barberton district was done prior to the advent of the railway in the Eastern Transvaal. Stores had to be brought from Delagoa Bay through a bad fever country stricken with tsetse fly. The railway only reached Barberton in 1896. One has only to travel through the district to know what the early pioneers were up against before the advent of the railway. Then again, some of Barberton's early producing mines suffered much from its metallurgical work. The reefs were not refractory but the gold was finely disseminated and a very low extraction was obtainable by amalgamation.

There were then no cyanide plants, and naturally the district suffered. There were, and are, also many reefs of a very refractory nature which even to-day tax metallurgists to get a satisfactory extraction.

Many of these mines have been steadily held from the earliest days. Kimberley Imperial was one of the notable mines in those days. Its career on the Stock Exchanges is remembered by many. There was high grade stuff in it, and so confident are some of its value that to-day it is still held by a man who came up to it from Kimberley in those early days.

A Plea for a Mines Bank.

The prospector who knows the reefs generally has not the money to expend on a plant and has to wait for some one to come along and help him. When the man with money comes along he mostly wants almost all and gives very little to the prospector. The country calls out for gold production. The Government want the mines developed, but there their efforts end. The Mines Department is most sympathetic and will always give help with roads and advice, but that is all.

For farming there is the Land Bank to help financially. Why cannot a similar institution be inaugurated for at least the smaller mines with, say, a limit of from £3,000 to £5,000 of an advance on any one mine, these advances to be a first charge and to be granted only when sufficient gold was developed and solely for erection of reduction plant? The old story that mines are too risky won't wash. We have a very efficient and intelligent Mines Department with some of the best brains in the mining world attached to it, and surely it is not beyond their capacity to devise some scheme for the complete protection of the money advanced by the State. For a qualified valuer it is as easy to value a developed mine as it is for officials to value land when a loan is being arranged with the Land Bank.

When there is so great a need for gold, when there is such a " prospecting " for avenues of fresh taxation, and the gold mines which provide so much of the present taxation are declining, and when the country districts so much favoured by the Land Banks offer so much opposition to any taxation on the land, surely it is up to all parties to see that some substantial effort is made to foster and encourage by monetary help and set a-going a number of mines in Barberton and other districts. If help were afforded, these mines would soon become a live asset to the State. Quarter of what the Government has received as its share in " Areas " this last year would go a long way to set fifty small mines going and do an immense amount of good to the country.

As I said before it is perfectly easy for a man, properly qualified, to estimate the value of a gold mine, and sufficient safeguards could always be devised to protect the country's money. Besides, my suggestion is only for plant, and it is always an asset. There is no objection to the Government taxing mines as heavily as they can. Mines are a wasting asset; they are part of the country's heritage which once dissipated can never be replaced, but it is in the country's interest, and especially in a young country's interest, to see its mines developed to their utmost so that the more permanent industries of farming and industrial work can be built up on the impetus given to them by the local requirements of the mines which always pay more for these local productions than the commodities would realise by being exported.

" FRENCH BOBS."

THE TOWNSHIP OF BARBERTON, ONCE THE CENTRE OF A LARGE AND PROSPEROUS MINING FIELD.

Workers and the Colour Bar.

A SPLIT IN THE RANKS OF LABOUR—THE FEDERATION AND THE MINE WORKERS' UNION.

At the meeting on Wednesday, 6th April, the General Council of the South African Industrial Federation discussed the question of the "colour bar," and by resolution strongly condemned the attitude of the S.A. Mine Workers' Union.

Mr. E. P. Hendrickz (the acting general secretary of the union) stated the S.A. Mine Workers' Union had decided on a ballot, on the point of their seceding from the Federation on this question.

Mr. A. Crawford (general secretary of the Federation) questioned if Mr. Hendrickz's interpretation of the decision of the last convention was correct or not. This resolution was: "That the principal of local autonomy apply to the policy of this Federation in respect to coloured labour, and that every body, whether local, provincial or national, decide for itself whether coloured labour be included or excluded." Mr. Crawford said Mr. Hendrickz was entirely wrong; there never had been any Federation decision that supported the action of any union in making the test exclusively white. They had coloured workers in some parts of the Union—boilermakers and other societies in their ranks in the coast branches. The Mine Workers' Union at Kimberley had coloured workers in their union, who were recognised as Europeans. Proceeding Mr. Crawford stated the decision of the General Council was for every union to decide itself whether it be white, mixed or coloured, by this it meant if the Mine Workers' Union decided it should be purely white it would have the backing of the whole Federation; however, supposing they had intelligent coloured men, with a knowledge of the trade, experts at their job, and able to earn the standard rate of wage; supposing a union found it in the interests of the trade, they had to admit such men, why should not their position be upheld equally with that of the Mine Workers' Union? Why should the mine workers not be as tolerant as they? Why should the Mine Workers' Union attempt to dictate to the other unions. "We are trying to organise labour on the basis of the white man." The policy of exterminating coloured labour was impossible! Mr. Crawford wanted to know "why Mr. Hendrickz wanted to dictate to any other union"? "If the Mine Workers decided on this question, they have declared war on the Federation." They were not entitled to dictate; if they seceded they would never be allowed to come back again as a white union. Mr. Crawford asked Mr. Hendrickz to withdraw his threat to secede from the Federation. This Mr. Hendrickz declined to do so. He said. "The Federation had given local autonomy and full power to send coloured delegates there. His union had definitely instructed its delegates, if any coloured delegates came to the meeting they were to retire. They were out for a white standard for South Africa. If the Federation removed the resolution the Mine Workers' ballot would be dropped.

Mr. Crawford proposed the following resolution, seconded by Mr. McMilian, which was passed with only one dissentient: "That, in view of the fact that the resolution of the convention supports the attitude of the Mine Workers' Union in respect to the colour bar, and only requests the tolerance of the S.A.M.W.U. in respect to the attitude other bodies may feel it necessary to take up on the question, this General Council considers the threat of the S.A.M.W.U. to secede from the S.A.I.F. because of the convention resolution to be without justification."

Latest Prices.

London, 4.10 p.m., Wednesday, 13th April, 1921.—Gold, £5 5s. Buyers: Modders, 62s. 6d.; Modder Bees, 23s. 9d.; Modder Deeps, 42s.; Van Ryn Deeps, 70s.; Modder Easts, 10s.; Government Areas, 76s. 3d.; Brakpans, 17s. 6d.; Anglo-Americans, 18s. 9d.

* * * *

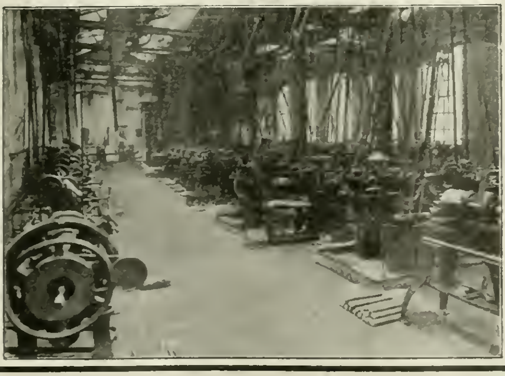
No Cargo Fleet for the Union.

In a full dress debate in the Legislative Assembly, on a proposition for the country to acquire its own Mercantile Marine, it was pointed out by Mr Jagger., the Minister of Transport, that the successful working of the South African and Australian Mercantile fleets, during the war period, could have been obtained by a child, and under the present circumstances of crisis in the world's shipping circles (which seemed to have escaped the keen attention of the mover, Mr. Madeley), it would be the height of folly to start a line.

* * * *

A Handy Workshop Fitting.

The ordinary "breast drill" is one of the most familiar of hand-operated tools and is commonly employed in workshops where small holes have to be drilled only occasionally. It may often happen, however, that it becomes necessary to drill a number of detached pieces which could be more easily handled by a light bench drill. At the same time, the volume of such work may not be sufficient to justify the purchase of a bench drill. To meet these conditions a British firm of engineers has introduced a small fixture which enables the ordinary breast drill to be adapted as a bench drill. It consists of a pillar, which can be bolted to the fitter's bench, carrying two arms, one of which takes the thrust at the end of the spindle, the other virtually taking the place of the operator's left hand. The feeding of the drill is operated by a treadle so that the operator's hands are free to manipulate the work and turn the drill. The whole equipment is very simple and cheap.



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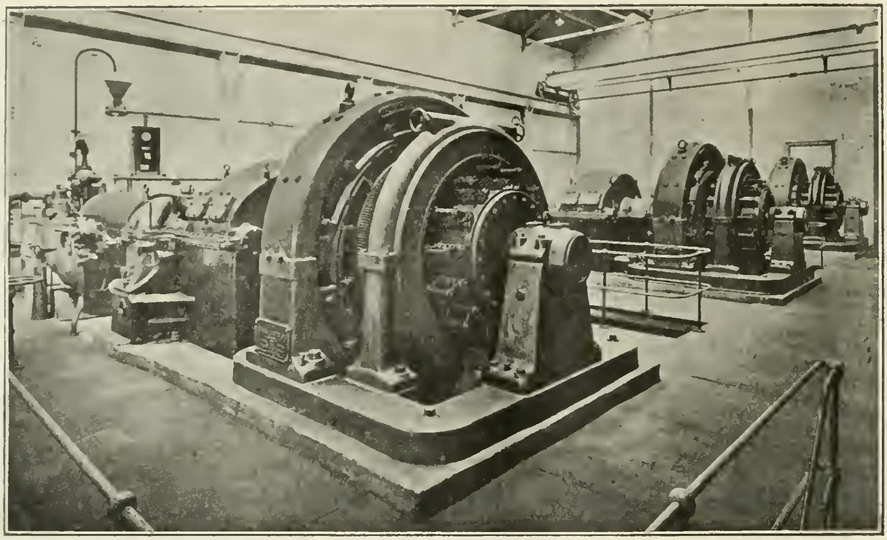

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Modder East.

MR. BLACKWELL ASKS FOR AN ENQUIRY—THE MINISTER OF MINES ON OPTIONS.

The position of the much-debated Modderfontein East Company was raised in Parliament last week by Mr. Leslie Blackwell, who asked the Minister of Mines and Industries a series of questions.

The Minister, in his reply, confirmed what has recently been written in this journal with regard to the unsoundness of financing a speculative undertaking like a mine by means of options.

In reply to Mr. Blackwell, the Minister said the Government's interest in the Modder East was 10 per cent. of the annual profits, and that the capital of the company was £1,315,624, made up as follows: Shares, £874,165; debentures, £89,240; options, £252,219. The highest quotation was 34s. 7½d. and the lowest 9s. 4½d. The working capital guaranteed to be provided under the lease was £350,000, and the provision was made for further funds to the amount of £809,541, to be raised by the issue of reserve and option shares. The actual working capital expenditure from the inception of the company to the end of February last was £121,356.

Mr. Blackwell further asked: Whether, in view of the heavy losses sustained by the investing public who bought shares largely because it was a company formed under agreement with the Government, and the widespread belief that the financial methods of the controlling house have been open to serious criticism, the Government will institute a thorough enquiry into the whole operations of this company since its inception.

To this the Minister replied: The heavy losses of the public are due to unjustifiable speculation. A perusal of the periodical reports by the Inspector of Mining Leases, which are published in the "Union Government Gazette," would have shown investors that the high prices were hardly justifiable by the results of working. The method of raising money by option shares has now proved itself unsound, but at the time when the system was introduced it was generally regarded as sound. The Government is not prepared to institute an enquiry.

Modder East finances are unusually complex, and it seems to us the Minister's statement does not clarify the position much.

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£50 SIX-YEAR NOTES AND THE SHARES AT PRESENT PRICES.

The notes may be paid for at once in cash or in four quarterly instalments of £13 15s. each. The notes carry 10 per cent. current yearly interest, payable on the 1st of May in each year, and £50 deferred interest, payable on the 1st May, 1927, that is at the end of the six-year period of the notes. The £50 principal of the note is also payable on the 1st May, 1927. The notes therefore return £30 in current yearly interest, £50 deferred interest, and the principal of £50, or £130 in all. Before the end of the sixth year it is expected that the Company's yearly profits will more than cover the final payments on these notes (see Prospectus). With the great assets the Company possesses, free of debt and unencumbered, which includes **2,140 Claims on the Far East Rand with no Government share of profits to pay,** it will be seen that these notes, which rank in priority to the shares, are an exceptionally safe investment with great earning power.

Make good your losses on other stocks by getting in now, and share in the rise which is surely coming. Remember, the Van Ryn Reef has never failed to show rich development; to-day on the Southern Van Ryn it is 8 dwts.; to-morrow it may be 12 dwts., and you will see the wisdom of these words.

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W. E. BLELOCH, Managing Director,
3, Transvaal Bank Buildings, Fox Street, Johannesburg.

Pretoria Silver-Leads.

REPORT FOR MARCH.

The report on the Pretoria Silver-Lead Co., Ltd., for March by Mr. Oliver King, consulting engineer, is as follows:—Operations have been retarded by the heavy rains during most of the month, all outside work and transport having been seriously affected. Good progress has been made at other points, however, the position at the end of the month being as follows:—All the required buildings are now practically completed, with the exception of the manager's house, which has been delayed by rain and late delivery of material. The hoisting engine is in position and will shortly be ready for work. The concrete pedestals for collar set and head frame are nearly ready, and the headgear ready for erection. Work will then be concentrated on the erection of the 1,000 ft. compressor, so that it can be brought into service when required. The boilers and feed pumps have been completely erected and tested in readiness for passing by the boiler inspector and finally bricking in. The main flue and stack foundations are ready, and the erection of stack in hand. The shop engine and all machine tools are erected and ready for work as soon as the first boiler can be brought into commission. A temporary pure water supply for domestic and earlier boiler requirements has been secured by laying a 2,500ft. pipeline from Mr. Shimwell's borehole. In spite of the difficulties caused by the exceptional rain during March the progress made has been satisfactory, and in my next report I hope to be able to advise that the sinking of the main shaft has made satisfactory progress.

Concerning Mines and Men.

Mr. H. B. Maxwell, M.I.E.E., Director of Sturrock (South Africa), Ltd., has returned to the Rand from a business trip in England.

* * * *

Messrs. Sturrock (South Africa), Ltd., have been appointed sole agents for the Union for Messrs. Clayton Wagons, Ltd., with whom are associated Messrs. Clayton & Shuttleworth, of Lincoln, England. This company has recently secured a very large order for rolling stock from the South African Railways.

Evils of Ca' Canny.

If all Labour leaders had the courage of Mr. J. R. Clynes, the great body of workers would be better acquainted than they are apparently at the present time with the disastrous effects to themselves of the policy of ca' canny. Writing in the current number of *Imperial Commerce*, Mr. Clynes reminds us that recent months have been fruitful in examples of the fallacy of reduced production. One of the most significant facts was that towards the end of last year, which was a year of low production, the highest figures of unemployment known in recent times were recorded. If low production found work for others there should be no unemployment problem to-day. Mr. Clynes admits that wage earners still cling to the belief that increased output merely adds to the gains of the capitalist class. This belief must be faced, and no change in the attitude of the workers towards the production problem can, he thinks, be anticipated until the men are safeguarded against unemployment and proof given that additional output is not of greater benefit to employers than to the operative classes. The Chairman of the Labour Party develops his argument to a more definite conclusion. He states that whether the safeguards referred to are obtained or not, greater output would confer more benefit upon wage earners than upon any other class of the community, whereas decreased production increases the burden of the worker and diminishes the purchasing power of his wages.

The Year with the Village Deep.

THE WORLD'S DEEPEST GOLD MINE—A PROFIT OF £128,581.

Mr. Stuart Martin's Report.

The consulting engineer's report for 1920 states: The profit of £128,581, an increase of £22,639 as compared with the previous year, is an improvement chiefly due to the higher selling price of gold.

The tonnage milled was higher by 12,900 tons. The native strike caused general disorganisation of the mine for some time, with consequent loss of output and profit.

The increase in costs is fully dealt with in the manager's report.

The tonnage of payable ore developed during the year was 533,700 tons, valued at 6·3 dwts. per ton.

The ore reserves has been recalculated and valued as at 31st December, 1920, as follows:

	BLOCKS.		
	Tons.	Value Dwts.	Average Stoping Width Inches.
Main Reef Leader ...	1,830,700	6·2	59
South Reef	41,600	6·9	55
Totals and averages ..	1,872,300	6·2	

	PILLARS.		TOTAL.	
	Tons.	Value Dwts.	Tons.	Value Dwts.
Main Reef Leader ..	508,900	5·9	2,339,600	6·1
South Reef	—	—	41,600	6·9
Totals and averages ...	508,900	5·9	2,381,200	6·1

The tonnage partially developed, but not valued at the end of the year was estimated at 142,800 tons.

The new ore reserve position may be regarded as fairly satisfactory; the tonnage has been maintained, though there is a small drop of 0·2 dwt. in the average value per ton: 19 per cent. of the available reserve has a value exceeding 7 dwts., and the remainder between 5 and 7 dwts. per ton.

The most encouraging feature of the year's work is the high percentage of payable rock developed; although the greater part of the reserve is made up of ore of low grade, the new tonnage developed shows an improvement in value of ·3 dwt. per ton.

The main incline is rapidly approaching the economic limit in depth, and will be stopped at the horizon of the 32nd level; to continue in depth, secondary inclines will have to be offsetted.

Central Pumping Scheme.—It is hoped that the pumping plant will be operating some time before the end of the current year.

Capital Expenditure.—Capital expenditure during 1921 is estimated at £17,847, the main items being: Central pumping scheme, £10,832; dismantling No. 2 shaft man engine, etc., £4,500; excavation for engine chamber at 31st level, £1,200.

The manager and his staff successfully coped with the many difficulties met with throughout the year, and much credit is due to them for the results achieved.

The Manager's Report.

The manager's report includes the following:

The revenue for the year was £956,921 1s. 11d., equivalent to 34s. 5d. per ton milled. For the year the average price realised per fine ounce of gold was 110·5 shillings, the working cost per fine ounce being 95·6 shillings.

A profit of £128,581 2s. 10d. resulted from the year's operations, which was an increase of £22,638 18s. 9d., as compared with the previous year.

The working costs showed an increase of 2s. 9d. per ton milled. This increase was due to the higher wages granted to white employees in November of last year, the wages being £39,473 in excess of those paid in 1919. Coloured wages show an increase of £8,628 12s. 0d. Contributions under the new Phthisis Act have added considerably to the working costs, an amount of £18,483 having been provided for this fund during the period under review, an increase of £7,196. Holiday and sick leave granted amounted to £13,746, this being an increase of £1,812 over 1919. Owing to the high cost of stores the working costs were increased considerably, the amount expended being £23,697 in excess of the previous year. During the month of February there was a strike amongst the native employees on a number of mines, of which this was one, which extended over a considerable period, and resulted in serious riots, and a collision with the Government Police. The operations for that particular month were seriously affected, and a loss of £5,358 was incurred. The succeeding months of March and April also suffered in consequence of the exodus of natives resulting from the riots, so that the total profits for the year were seriously reduced by the losses incurred during these three months.

Under the abnormal expenditure account an amount of £7,167 was spent, the principal items being: The installation of a new fan at 16th level; the installation of wooden guides at No. 3 vertical shaft; a permanent pipe column at No. 3 incline shaft; additions to No. 3 shaft native compound.

The total tonnage crushed was 555,600, being an increase of 12,900 tons as compared with the previous year.

The cost of development for the year was £86,185, equivalent to 3s. 1·2d. per ton milled, which is an increase to the working costs of 7d. per ton milled, compared with the year 1919.

The main incline shaft is now being sunk to the 32nd level and has reached a vertical depth of 6,059 feet below the surface.

A second pump has been installed at the 28th level to provide for stoping operations in the lower part of the mine, and the addition of this pump will give added security against the increased water to be handled.

The Sirocco fan which has served the mine for the last ten years has been removed from the connection between this mine and the Village Main Reef mine and is being held in reserve.

The new stators which were ordered for the No. 3 shaft hoists have been put into commission and are working satisfactorily. It is not anticipated that there will be any further trouble with these engines.

In stoping operations 97·7 per cent. of the ore mined was broken by machines, and by this means the maximum tonnage has been obtained with the labour available. It will be clear, however, that in the working of this very deep mine the standing charges are a very large proportion of the total running cost, and in consequence it is of the utmost importance that a full labour supply should be available for underground work. During the year only 70·9 per cent. of the required native strength has been obtained.

The Price of Diamonds.

What can one believe of the conflicting statements that are being made about the state of the diamond market? The Hatton Garden merchant, Mr. Gordon Nathan, interviewed, scouted the correctness of the report of a sensational drop in the value of diamonds. He said there had perhaps been a small drop in cheap stuff owing to private realisations due to the ruling conditions, but the price of pure stones had been maintained and people were still prepared to pay a fine price for fine stones of the best workmanship.

Mr. Nathan ridiculed the stories that millionaires who were temporarily embarrassed were realising their wives' jewellery and flooding the market. He declared that buyers were awaiting fine stones, and pointed out that the diamond syndicate had not changed the price of diamonds, for which there was a quiet demand.

1920 at the Crown Mines Limited.

25th ANNUAL REPORT.

The net profits for the year of this great constellation of Central Rand properties was £1,067,181 12s. 7d., and this with the unappropriated balance at the end of the previous year £403,464 7s. 9d. and discount on debentures purchased makes a total of £1,472,022 4s. 10d.

This was appropriated as follows:—

	£	s.	d.
Expended on Capital Account...	£142,786	4	1
Government and Provincial Taxes...	143,301	15	3
Dividends Nos. 38 and 39.	728,582	3	0
	1,014,670	2	1
Leaving unappropriated balance 31st December, 1920	457,352	2	6
	£1,472,022	4	10

This balance is made up as follows:—

	£	s.	d.
Shares and Interests in Co-operative and other concerns...	£55,398	7	6
Stores and Materials, etc.	206,760	15	10
Sundry debtors and payments in advance	56,444	10	1
Net cash after allowing for liabilities... ...	138,748	9	1
	£457,352	2	6
Outstanding Debentures stand at	£402,800	0	0

The total of the Ore Reserves is 8,131,700 tons, with an average assay value of 6·4 dwts. over a stoping width of 62 inches. This shows a decrease in the ore reserves from last report of 319,700 tons, the assay value is increased from 6·3 dwts., while the stoping width shows a decrease of one inch.

Of the above total 1,289,660 tons, valued at 7·3 dwts. are not available for stoping, being required for shaft and safety pillars.

Development work below the 19th level has made rapid progress, the monthly footage, during the year, shows an appreciable increase from 2,977 ft. in 1919 to 3,353 ft. per month in the year under review.

Sub-vertical shaft No. 5 A was completed to a depth of 1,573 ft. below the 19th level main haulage east, the shaft is equipped and in readiness for the exploitation and development of the large area lying north-east of the South Rand Dyke.

The work on the sinking of No. 14 A. Shaft has made good progress. The general manager reports: "To open up the large undeveloped area to a vertical depth of 5,000 feet from the surface requires heavy shaft sinking and much dead work, this work is well up to time to meet the exhaustion of the upper levels of the mine.

A very encouraging fact is the development on the 19th level south of the South Rand Dyke, the totals to date are:

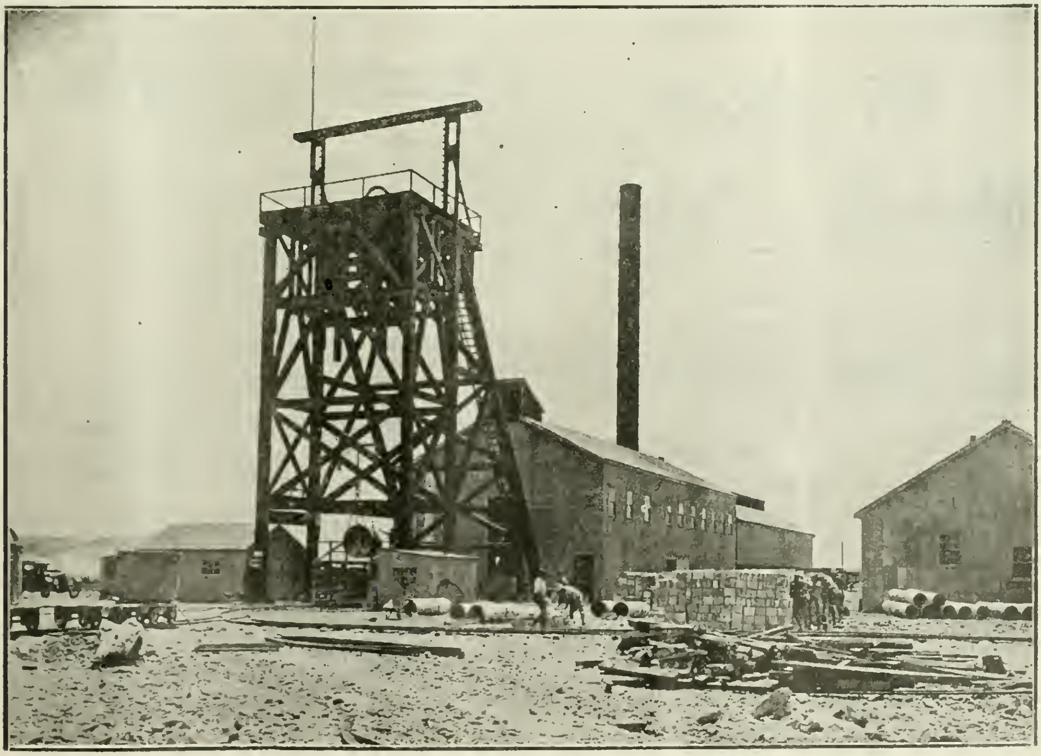
	Footage on Reef.	Width Inches.	Value Dwts.	Inches Dwts.
Main Reef Leader... ...	2,050	25	2·40	600
South Reef	1,620	32	9·4	301
Totals and averages...	3,670	28	16·7	467

The costs have increased by 8d. per ton milled.

The operations for the year show an increase of profits over the previous year of £342,913 6s. 7d., the bulk of which was of course secured from the gold premium.

Daggafontein Mines.

An important piece of development has just been completed in the Daggafontein mine. The following cable has been despatched to the London office for publication: "Main haulage connection between shaft No. 1 and shaft No. 2 has been made."



Shaft Sinking at the Crown Mines.

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Annual Subscription Rates: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

Agents for Great Britain and America: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

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EDITORIAL.

COAL AND RAILWAY RATES.

The members of the deputation from the Transvaal and Natal Coal Owners' Associations who recently have made representations to the Government on the important subject of railway rates on coal have evidently not agitated for a reduction in vain, for as we announced in our last week's issue it is notified that, with effect from Wednesday, April 6, a reduction of 6s. 6d per 2,000 lbs. was made in the railway rates for bunker coal to Union ports and Lourenco Marques. This reduction applies to all coal placed in ship's bunkers on or after the above date. The first intimation of a reduction in coal rates stated: "No alteration will be made in the existing net rates for export cargo coal, or for coal utilised for bunkering ships carrying full cargoes of export coal. The foregoing reduction in the bunker coal rates makes a total reduction of 15s. 5d. per 2,000 lbs. in the rates in force prior to February 7." Subsequently a reduction in export rates also was agreed to.

This concession on the part of Sir William Hoy's administration follows hard on the heels of Sir Abe Bailey's recent Parliamentary denunciation of the Railways' policy in regard to charges imposed on the collieries, and although Bulletin No. 18 recently issued by the General Manager of the South African Railways and Harbours makes a fair defence of the Administration's action, we cannot help thinking that the reduction in rates is some acknowledgment of the justice of the criticism. We quite sympathise with Sir William Hoy in his attempt to justify the increased rates recently imposed. We fully appreciate his difficulties in the matter. The recent reductions in rates on bunker and export coal have involved a surrender of over one million pounds sterling per annum, says Sir William, and it is felt that the colliery interests should respond to the efforts of the Administration by at least abandoning the increased prices introduced from January 1. "The reductions made by the Administration mean adding to an already considerable deficit, while the reductions which it is suggested should be made by the collieries merely involve reducing their profits in the interests of future trade," writes the General Manager.

But the facts appear to be that in the past few years railway rates on some classes of coal have risen by as much as 500 per cent., and there have been all-round advances on coal rates generally. The coal owners, it is true, recently have advanced the selling price of their product; they would have indeed been fools had they not done so during the recent epoch of rising prices all round. But the price of coal has not risen in anything like the same degree as railway rates for the carrying of this commodity have advanced.

The Railway's latest charges to the collieries were also discussed in Parliament on Tuesday, when Mr Boydell asked the Minister of Railways and Harbours: (1) What reductions had been made in the railway rates on (a) coal bunker, (b) coal cargo, (c) wheat, maize and other grain, and (d) other commodities since January 1, 1921; and (2) what was the estimated loss of revenue in consequence of these reductions in the railway rates?

The answer was as follows: (1) (a) 15s. 5d. per 2,000 lbs.; (b) 1s. per 2,000 lbs. to destinations in the Red Sea and Indian Ocean and 9s. per 2,000 lbs. to other destinations; (c) a maximum rate of 35s. per 2,000 lbs. had been introduced for South African wheat and flour for distances over 500 miles, no reductions being made in the rates for maize and other grain; (d) none except the usual minor alterations made from time to time. (2) £1,627,000 per annum, but had the reductions not been made the loss in revenue through the loss in trade would have been much greater.

The Minister's reply seems further to warrant the declaration of the colliery interests that railway rates have been stifling the export and bunker trades. There is, too, the important consideration of railway rates on the internal coal trade upon which our industries so largely depend. The concessions recently announced are certainly very useful and necessary, but after all what do they really mean? To our mind, these reductions in rates are not very dissimilar to the "discount" advertised by a shopkeeper who raises his prices two or three hundred per cent. before he displays his generosity in the form of half-price sales tickets in the windows. The coal industry of this country has, we hope, a chance of recapturing at least a portion of the trade recently lost to Great Britain. The insane strike of the English, Scotch and Welsh miners will be to the advantage of the Union's coal mines. But South Africa cannot seize the opportunity so offered if the collieries of the Union, which have never been very profitable concerns, are crippled by unduly high freight charges and are unable to engage in contracts on any stable basis.

Our collieries require relief from spasmodic rises in carrying charges. They cannot do sound and profitable business whilst financial hysteria prevails in the Government Department which undertakes to transport the product of the coal mines to consumers.

Transport of coal at a reasonable and stable rate is one of the main functions of the railways, and we believe that if the S.A.R. Administration will attend to this part of the job the coal owners can be relied on to look after the trade part of the business.

THE OUTSIDE DISTRICTS.

We have often considered it passing strange that the outlying gold ventures of the Transvaal have responded so little to the incidence of the gold premium. There are in this country many quartz propositions of promise and it is probable that if they were situated in Rhodesia or in any other country not dominated and cast into insignificance by the pre-eminence of the Rand these ventures would attract considerably more capital and general attention and would yield substantially larger profits.

In recent issues of this paper the noteworthy letter by Mr W. P. Taylor on the subject of South Africa's scattered mineral wealth and the article on Barberton appearing in our last impression have attracted considerable attention.

In this number is another contribution on the richness of the De Kaap reefs which is well worthy of perusal, and we would, too, direct attention to the letter of Mr. Shkaidy, appearing in this issue, on the subject of the disadvantages suffered by the small mine owner in respect of high charges for mining supplies.

We suggest to Mr Shkandy and his colleagues the formation of a tributors' and small mine workers' association as has been done in Rhodesia. One thing seems obvious, and that is the national necessity which exists for the expansion of the mining industry in the outlying districts. Several of the older mines of the Rand have almost exhausted their ore contents and numerous other properties are merely existing on the gold premium. We want new mines to replace these declining ventures and we believe that such new mines exist in this country, and we think, too, that they can be found and be successfully brought to the producing stage by intelligent prospecting and by a more generous system of State aid than they hitherto have been accorded.

Notes & News.

West Springs: Excellent Sinking Progress.

During 1920 sinking at No. 1 shaft was energetically proceeded with. Work was favoured by an absence of serious difficulties and the result was an excellent rate of progress. The footage sunk for the year was 2,412 feet, equivalent to an average of 203 ft. 6 in. per month.

The footages accomplished during each individual month are as follow: January, 187 ft.; February, 209 ft.; March, 244 ft.; April, 237 ft.; May, 235 ft.; June, 226 ft.; July, 250 ft. (record footage for this type of shaft); August, 180 ft.; September, 128 ft.; October, 176 ft.; November, 170 ft.; December, 200 ft.; total for the year, 2,412 ft.

We believe that the total for the year of 2,412 feet was a record for a shaft of this type, but we are open to correction on this point.

* * * *

May Day Celebrations.

The programme laid down at the meeting of Joint Executives of the federated trade unions for this year's celebration of May Day, which falls on a Sunday is briefly as under. Sunday, May 1, official May Day celebration. No work beyond what is necessary to ensure safety of industries and to avoid making an immediate resumption of work difficult. Trams to stop. Monday, May 2: "Day of rest." Only such work as that applicable to an ordinary Sunday to be performed.

On the Sunday, according to the ideas expressed at the meeting, there will not even be trams running. As far as the railway is concerned, the Joint Executives recognised that it was impossible to hold up trains on the veld for 24 hours, but felt that the virtual cessation of all other industry would make May Day as easy as possible for the railwaymen. Light and power, of course, will not be interfered with. On the mines there will be a complete stoppage, as far as practicable on Sunday; while the position on Monday, May 2, will be practically that of an ordinary Sunday.

Thus does a war-broken world revive its decadent industries! We are tempted to suggest to labour that in addition to Boxing Day and May Day they should include Washing Day in their comprehensive conception of "Rest."

Sale of Knights Deep Houses.

In the House of Assembly on Tuesday, Mr Boydell asked the Minister of Finance (1) Whether he was aware that the Knights Deep properties including 120 houses had been sold to speculators, and that the occupants of the houses had received a month's notice to quit. (2) Did the conditions of sale enable the new owners to get ground titles transferred to them; and (3) Would the Government, in view of the acute shortage of houses, take steps to secure the present tenants against eviction or increased rentals, and also, if necessary, prevent the demolition or removal of these houses.

The Minister replied that (1) so far as his information went the Knights Deep G.M. Co., which was realising its assets, was selling houses on its claims in the open market, and (2) the conditions of sale did not include title to ground of which the company was not the freehold owner, and regarding (3), the hon. member was referred to the provisions of Section 11 of the Rents Act.

* * * *

Bantjes Consolidated.

The work accomplished in the 11th level west drive by the Consolidated Main Reef Mines and Estate, Ltd., during the quarter ended 31st March, 1921, was 100 feet, of which 29 feet were in dyke and 71 feet in country.

West of the dyke the Main Reef Leader has been located by means of boreholes and the drive in country rock turned to intersect it. The values disclosel by the boreholes were unpayable.

Bantjes shares have recently firmed up to 6s., presumably on liquidation anticipations.

* * * *

Union Corporation.

The accounts for the year ended 31st December, 1920, show a realised net profit of £190,074 and, including £58,281 brought forward from 1919, there is an amount of £248,355 to be dealt with. The directors have decided to add £40,000 to the reserve account, and have declared a dividend of 16 per cent. (2s. per share), involving an amount of £140,000 and leaving the sum of £68,355 to be carried forward. The dividend will be payable to all shareholders registered on 15th April. The transfer books will be closed for the purposes of this dividend from 16th April to 2nd May, both days inclusive. Coupons No. 10 attached to share warrants to bearer will be payable in respect of this dividend on and after 11th May.

* * * *

The March Gold Output—A Big Increase—112,986 ounces over February—Larger Native Labour Total.

An increase of 112,986 ounces in the monthly gold output has been announced by the Chamber of Mines, the grand total for March being 671,123 ounces as against 558,137 for the shorter month of February.

There was also an improvement in the native labour position—an increase of 2,846 boys, compared with February.

The value of the March output, taken at £5 3s. 9d. per ounce, is £3,481,150, as against £2,895,336 in February and £3,420,863 in January, when the valuation was taken at £5 5s. per ounce.

The output totals for March compared with those for the previous month are as follow: Witwatersrand: March, 656,572 ozs.; February, 543,767 ozs.; increase, 112,805 ozs. Outside districts: March, 14,551 ozs.; February, 14,370 ozs.; increase, 181 ozs. Grand total: March, 671,123 ozs.; February, 558,137 ozs.; increase, 112,986 ozs. Every Rand company shows an increase except the Roodepoort United Main Reef, whose March return is ten ounces below that for February.

The native labour figures for March show an increase of 2,846 natives on the gold mines, an increase of 209 on the coal mines, and a decrease of 248 on the diamond mines. The totals for the past three months are: On gold mines: January, 165,287; February, 171,518; March, 174,364. On coal mines: January, 14,511; February, 14,697; March, 14,906. On diamond mines: January, 3,319; February, 1,612; March, 1,364. Totals: January, 183,117; February, 187,827; March, 190,634.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

Rand Selection.—Twenty-ninth ordinary general; Corner House; May 17.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

Knight Central.—Corner House; May 20.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Union Corporation, Ltd.—Ordinary general meeting; 94 Main Street; June 3, 11 a.m.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Coal and By-products.

How to Analyse and Use Variable Cost Data.—*Coal Trade Journal*, America; March 9, pp. 267-285.

Spontaneous Combustion, Gives Coal Pile Heat Readings.—*Coal Trade Journal*, America; March 9, p. 290.

Mechanical Haulage and Output in Coal Mines.—*Iron and Coal Trades Review*, March 18, p. 102.

Engineering.

Causes of Subsidences and the Best Safeguards for their Prevention.—*Iron and Coal Trades Review*, March 18, p. 392.

Salving of the Italian Battleship, " Leonardo da Vinci."—*The Engineer*, March 18, p. 281.

The Maag System of Gearing.—*The Engineer*, March 18, p. 283.

Electrical Trucks and Industrial Locomotives.—*The Engineer*, March 18, p. 290.

The Influence of Transformer Connections on Third Harmonic Voltages.—*The Electric Review*, March 18, p. 359, and March 25, p. 393.

Temperature Limits on Large Alternators.—*Electrical Review*, March 18, p. 362.

Application of Electric Locomotives to Main Line Traction.—*The Electrical Review*, March 25, p. 395.

Metallurgy and Chemistry.

Reaction in Gas Producers.—*Iron and Coal Trades Review*, March 18, p. 391.

The Degassing and Purification of Boiler Feed Water.—*Electrical Review*, March 18, p. 840.

Iron and Steel.

Application in Rolling of Effects of Carbon, Phosphorus, and Manganese on Mechanical Properties of Steel.—*Mining and Metallurgy*, America, March, p. 49.

Miscellaneous.

German Views on Dumping.—*The Engineer*, March 18, p. 292.

Magnetic Plate-Handling Crane.—*The Engineer*, March 18, p. 298.

The Oil Situation.—*Mining and Metallurgy*, America, March, p. 20.

Problems Fundamental to Mining Enterprise in the Far East.—*Mining and Metallurgy*, America, March, p. 28.

Zinc.—*The Mineral Industry of the British Empire*: H.M. Stationery Department, London; price 3s. 6d.

Chemical, Metallurgical and Mining Society.

The ordinary general meeting of the Chemical, Metallurgical and Mining Society will be held in the Scientific and Technical Club, 100 Fox Street, Johannesburg, on Saturday, the 16th inst. (to-night), at 7.45 p.m. Paper for reading: " Methods used in the Detection and Investigation of Vitamines," by Dr. E. Marion Delf. Symposium: " Miners' Phthisis." Final discussion: (1) " The Ideal Mining Law," by C. J. Gray (Member of Council); (2) " Notes on the Influence of Soluble Silica and Calcium Salts on Precipitation," by J. Hayward Johnson (Member of Council); (3) " Note on Experiments on Ventilation Problems in Development Work on Mines," by E. J. Laschinger; (4) " Practical Use of Hill's Kata Thermometer," by H. J. Ireland; (5) " Cementation of the Substrata of the Mazoe Dam Retaining Wall," by Dr. G. A. Voskule. Discussion: (1) " Chemical Methods of De-aeration of Water of Solutions," by H. A. White (Member of Council); (2) " Treatment of Antimonial Gold Ore at the Globe and Phoenix Mine, Southern Rhodesian," by V. E. Robinson (Member); (3) " Occurrences of Fire Damp on the Far East Rand," by T. N. Dewar (Member).

The Council of the Witwatersrand Branch of the British Medical Association has issued a cordial invitation to the members of this Society to attend a special meeting at the Scientific and Technical Club on Thursday, the 14th instant, at 8.15 p.m., when Dr. A. Mavrogordato will read a paper entitled " Studies in Miners' Phthisis, with special reference to the early stages."

ENGINEERING SECTION.

Wave Power Transmission and Tools.

A NEW ENGINEERING SCIENCE—ITS APPLICATION TO THE RAND—CAPITAL EXPENDITURE AND VENTILATION ASPECTS.

Considerable interest is now being taken locally in the subject of transmission by wave power. At the outset it should be made quite clear that wave power has nothing to do with the philosopher's dream of harnessing the sea. Wave power appliances economically transmit and apply energy by wave impulses through water, thus proving that a sixth practical method for the transmission of energy is now available in addition to electricity, compressed air, direct mechanical steam and hydraulic. Enormous savings over compressed air are claimed for this method, and it is contended that there is great scope for the employment of wave power on the Rand, particularly in regard to its application to rock drills.

Although wave power transmission is a new branch of engineering science, Rand engineers have kept closely in touch with its development, and it would be unwise to take for granted all the assertions that are made regarding the economies that would result from the employment of wave power on the Rand without a very close investigation of the matter.

In the first place, the installation of wave power appliances in our mines would mean huge sums of capital expenditure and the scrapping of compressor plants.

In the second place, it would entail the substitution of new and expensive ventilation appliances right along the Reef.

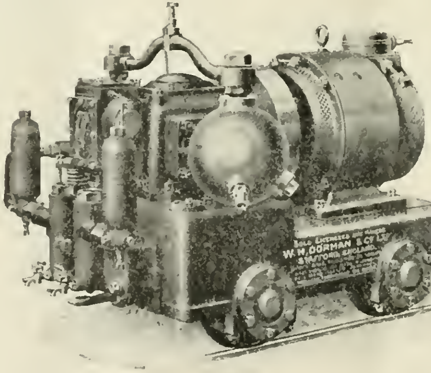
For these reasons it does not appear that it would be policy for the mines to discard their existing compressed air plants, but in the case of quarries or of mines starting *de novo* wave power certainly presents many startling economies.

What is Wave Motion?

There are at present five methods in commercial use for the transmission of power, namely, Steam; Direct Mechanical; Electric; Compressed Air; and Hydraulic. Wave Transmission or Sonic Transmission are names used alternatively to describe a sixth method in which are employed wave motions or pulsations set up in an enclosed column of liquid. The liquid (usually water) is contained in a pipe connecting the apparatus generating the wave motions to the machinery which applies them to useful work. Although apparently similar to Hydraulic Transmission, the underlying principle of Wave Transmission is totally and absolutely distinct. In hydraulics a continuous flow of liquid or motion of the liquid column as a whole invariably occurs, whereas in Wave Transmission there need be no direct or continuous flow, the particles of the liquid merely pulsating backwards and forwards about a mean position. Water is compressible. Owing to the degree of its compressibility being very small compared to many materials in daily use, the idea that water was incompressible came to be accepted even by engineers. For the first time in the history of mechanics advantage is taken in Wave Transmission of the elasticity of water (and also of oil and other fluids) to transmit energy. What occurs in Wave Transmission can be illustrated by simple analogy. In the ordinary speaking tube, pulsations set up in the contained air by the vibration of the speaker's vocal cords travel in the form of sound waves to the far end, where their energy is utilised in reproducing the vibrations in the ear of the listener. The column of air in the tube does not flow through the tube, but the particles merely subjected to small movements to and fro as the sound waves pass along. Similarly in Wave Power Transmission the pressure impulses set up by the Wave Power Generator travel through the column of fluid contained in a metal pipe which connects the Wave Power Generator to the Wave Power Motor. There is no continuous flow, the fluid progressively moves forward and backward about mean positions. The wave thus travels through the column of liquid and gives up its energy to the motor at the far end. The motor is a simple mechanism for converting the waves of energy into any desired mechanical action.

Description.

Taking the simplest form of Wave Transmission, imagine two cylinders fitted with plungers, the cylinders on the underside of the plungers being connected together by a long pipe completely filled with water. If one of the plungers is moved rapidly up and down it will set up at each downward stroke waves of compressed water, which, travelling along the pipe at the speed of sound (about 1,800 feet per second) will exert their energy on the plunger at the far end, and if this be suitably loaded, a simple reciprocating motion will be produced in exact synchronism with the reciprocations of the first plunger.



Dorman Portable Wave Power Generator.

The Equipment Necessary.

Wave Transmission Equipments are inexpensive to manufacture, simple in construction, and practically "fool-proof" in operation. They consist of:—

Wave Generator.—One or more metal cylinders each fitted with a piston connected by a crankshaft to any type of high speed prime mover such as an ordinary steam or internal combustion engine or electric motor.

Wave Motor.—One or more metal cylinders, each fitted with a piston, designed to receive the power wave at the intake end. The other end of the piston is suitably connected to the tool or other mechanism desired to be operated. The simplest application is found in such appliances as rock drills and riveting hammers where the piston is used as a floating hammer and strikes directly on to the shank-end of the drill steel or rivet snap.

Wave Transmission Pipe Line.—Ordinary rigid or suitable flexible piping is used to contain the liquid which extends from the wave generator to the motor, and is referred to as "the liquid column." Various kinds of fluid may be used, from water to heavy oil. The highest transmission efficiency is, however, obtained through water.

Points of Resemblance to Electricity.

In many ways Electricity offers an excellent analogy to explain both Wave Transmission and Hydraulics. Ordinary hydraulics being represented by the Continuous current and Wave Transmission by the Alternating current systems. From the scientific and practical point of view one of the most interesting facts about Wave Transmission is this similarity in many features to Alternating Current Electrical Transmission. The points of resemblance are not mere coincidences. They go to prove the important fact that this purely physical method of transmitting energy is closely allied and is for all practical purposes a sister method, to the alternating current electrical system. Anyone with a knowledge of electricity will find it easy to understand Wave Transmission. The laws and formulae of Wave and of electrical transmission coincide to the extent that they are nearly interchangeable. Most of the phenomena of electricity have their parallel in Wave Transmission. For instance there are direct equivalents for Volts, Amperes, Frequency, Angle of Phase, Induction, Inductance, Capacity, Resistance, Condensers, Transformers, Single-phase or Poly-phase systems. In both systems there are used Generators, Rotary and Reciprocating Motors, and Heating Apparatus, Transmission Lines, etc.

Industrial Advantages.

Wave Transmission has now been developed to a practical stage, and is being successfully applied to mechanical purposes. It affords facilities unobtainable in any other system for certain applications of power, and in many industries it promises to effect important economies. The general commercial advantages presented by Wave Transmission may be summarised as embracing great economy with high efficiency, convenience, safety and reliability in the transmission and distribution of power. All the appliances used in the system of Wave Transmission are claimed to possess the following outstanding features: Simplicity, Adaptability, Portability, Low initial cost, Low maintenance charges, Safety.

SPONTANEOUS COMBUSTION OF SOUTH AFRICAN COALS.

A Valuable Heat Reader.

Spontaneous combustion still remains the big problem in industrial coal storage and the matter is of special importance to the South African bunker and cargo coal trades. While the subject has engaged the attention of fuel engineers for several years, there is still a wide difference of opinion as to the causes and the best methods of prevention. Experience has developed that certain bituminous coals and certain sizes have a tendency to heat at varying pile depths. The fact, however, that one pile will heat, while a neighbouring pile of the same grade of coal may escape such action calls for constant attention upon the part of the consumer who would avoid loss.

The difficulty attaching to the practical handling of the problem lies in the fact that the heating may start deep within the pile and continue for days and weeks with no physical evidence, until the pile is uncovered, of what is taking place. "This slow combustion," says a leading fuel engineer, "which is even more destructive than combustion by flame, owing to the fact that it cannot be so readily detected, accomplishes its destructive heating, quietly and unnoticed, throughout an ever-increasing zone, beneath the surface of stored coal. Could the consumer look beneath the surface of his coal pile, he could save himself enormous losses by using that part of his coal supply first which showed a tendency to become even slightly heated."

To give the consumer this glimpse of what is going on beneath the surface of the pile what is known as the Thornley Coalometer has been designed. Each unit of this instrument consists of a weatherproof head carrying one, two or three temperature indicators, a hollow galvanized steel stem supporting the head and housing fine copper capillary tubes which connect with the metal coalometers located at correct depths in the tube. These bulbs, the depth of which is shown on the indicator dial, give the temperature at the depths indicated. The bottom of the tube ends in a hardened steel point so as to insure easy installation in any depth of pile. A surface lug shows how far into the pile the tubes should be forced.

These units are forced down into the coal pile at definite depths and at various points and the readings on the dials give the user the exact temperatures existing beneath the surface. The scale on each dial starts at 32 deg. F. and is coloured black. At and above 120 deg. F. the scale is coloured red. This indicates excessive heat and warns the consumer that the coal should be moved. As the dials show whether they are registering for depths of five, ten or 15 feet, the dial showing the highest temperature tells the depth at which the heat is generating.

According to the manufacturer, tests have shown that an installation of one unit each 50 feet in both directions from its neighbour will efficiently indicate conditions of temperature below the surface. Thus the installation of one triple unit will protect a volume of coal 50 by 50 feet at its base of any depth. The Thornley Coalometer system is designed by F. C. Thornley & Co., Inc., New York.

New British Ironstone Deposit.

A fresh deposit of ironstone has been discovered in Great Britain after boring operations to a depth of nearly 500 feet. The seam is close on thirty feet thick and is expected to prove of great commercial value. A larger bore will now be sunk, and the result of the further investigation is awaited with the keenest interest in the British iron and steel industry.

* * * *

Automatic Warnings for Engine Drivers.

On one of the chief British railways nearly all the locomotives are fitted with an automatic device to warn the driver when the "home" or "distant" signals are against him. A crank is placed between the two sets of rails, and when the signals are not down, it comes into contact with a lever on the engine, sounding the whistle and opening a small cock on the train pipe, thus putting on the brake. This mechanism is expected to raise still higher the standard of safety achieved in British railway operation. There is a common saying that "the safest place in the world is inside a British express passenger train."

* * * *

Tractors to the Rescue.

A sudden strike among the employees at the electricity station in a British town interrupted the supply of current to the local factories and thus brought them to a standstill. Help came, however, from an unexpected quarter. One of the factories was engaged on the mass production of tractors for agricultural and other purposes; and within a few hours a number of tractors were employed to supply the necessary power in this factory. Twelve tractors were belted up to a shaft from which several motors were driven as dynamos, this novel installation giving an average output of two hundred horse-power. Other tractors were used to drive machines directly. When the news of this got about, demands for the tractors came from other factories, and the emergency service so provided greatly discounted the effect of the strike.

A NEW MINING THEODOLITE.

Messrs. T. Cooke & Sons, Ltd., of Buckingham Works, York, write as follows:—

We believe that the present-day mining engineer considers accuracy in his underground surveys before everything else, and appreciates an instrument designed to assist him in attaining that end. We therefore have pleasure in bringing to your notice our new Rand Model Mining Theodolite, which we are confident will meet the most exacting requirements of the surveyor. The selection of such a highly scientific and complicated mechanism as a first-class theodolite calls for more than usual experience on the part of the purchaser, especially as the refinements regulating price must be appreciated before they can be justified. To meet the demand for a well designed, carefully-made and thoroughly reliable mining theodolite we have evolved our new Rand Model. Its special features have been determined in collaboration with some of the most eminent mining surveyors at Home and abroad, and mature experience in both field and workshop has been brought to bear on its design. The fact that our Rand model mining theodolite has been adopted by the mining departments of some of our principal universities for the higher instruction of their students speaks for itself. We enclose our pamphlet No. 505 giving full details and complete specification, but should the information contained therein be insufficient, we shall be very pleased to answer in detail any queries you may wish to put. Our dip compass (made to the design of Dr. Henry Louis of Armstrong College, Newcastle-on-Tyne), is a great improvement on the ordinary instrument provided for tracing the presence of magnetic iron ore, or for measuring magnetic deviation or inclination. Our pub. 510 giving full details will be sent on request. Another mine surveying instrument of a specialized nature is the portable magnetometer or magnetic bearing reflector invented by Mr. T. Lindsay Galloway, which, in conjunction with a theodolite, can be used to determine accurately the direction of the magnetic meridian as a basis for mine surveys. Full particulars are given in our pub. No. 531, which will be posted free of charge.

THE BRITISH STANDARD EXPORTER.

We have received a valuable volume entitled "Engineers' Standard Catalogues" from the chairman of the British Standard Exporter, which is accompanied by the following letter:

On behalf of the Council controlling the "British Standard Exporter," the pleasant duty devolves upon me of sending greetings to our friends in the overseas markets. The War has caused a great upheaval in the trade of the world, with the result that buyers and producers are less in touch with each other than hitherto. The production of the "British Standard Exporter" series, of which this volume is a part, represents a serious attempt on the part of British manufacturers in all industries to meet the wishes of buyers abroad for a reference work on sources of supply of British manufactured goods of every description. The great efforts put forward by British manufacturers generally in the arts of war have necessitated additional plant and machinery which is now being speedily adapted to the arts of peace. It is only reasonable, therefore, to suppose that the output capacity of manufactured goods will greatly exceed that of pre-War years, and that manufacturers will be in a very favourable position to cater for the needs of buyers abroad. I sincerely hope that this work, which has involved an outlay of over a quarter of a million pounds sterling, will provide a closer tie between buyers overseas and British manufacturers. I trust that it may lead, not only to the promotion of increased business, but also to the extension of the friendly relationship which has existed in the past.

A Handy Paraffin Engine.

Several British engineering firms have been giving attention to the production of small robust petrol or paraffin engines specially adapted for agricultural use or in other situations where expert supervision is not available. In one of the latest British products of this class, separate cooling tanks (which take up a great deal of space and make the equipment much less portable) are eliminattd, and the cooling of the cylinder is effected by means of water in an extension of the cylinder jacket. No pump, piping, radiator, or other complication is used. A three horse-power engine of this type weighs 382 lbs., and runs at 600 revolutions per minute. It operates equally well on petrol or paraffin and is built to give reliable service under the most exacting conditions.

* * * *

British Brass Melting Electric Furnaces.

An interesting new type of electric furnace for brass-melting has been perfected by a British firm. Its main feature is the practically indestructible character of the heating elements. They are of the resistance type and do not oxidise. Several years of invention and experiment were occupied in achieving this result, which abolishes all maintenance costs on the furnace. Three of these furnaces are in operation, each of 100 kilogrammes capacity and each taking 25 units of electricity. A charge of brass is melted every hour, with a consumption of 300 units of electricity per ton. The lining of the furnace can be used for years without renewal, so that practically the only cost is for electricity and labour.

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Letters to the Editor.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Allow me through the medium of your valuable journal to bring the grievances of the small mine workers to publicity. Perhaps it will arouse them to organise and try and remedy some evils, which could be remedied by combination and organisation. The greatest obstacle is high working costs, which is killing gradually the big mines, despite their organisation under the Chamber of Mines, where stores are only bought by pool, etc. The small worker is left to perish under the abnormal high prices of stores, so that even the temporary premium is not of great help to him. For instance, cyanide costs the small mine up to 1s. 9d. per lb. against 1s. 1d. for big mines; zinc, which is down in the world markets to £26-£29 per ton, is still paid for by the small man at £130 per ton cut zinc. If the small mines of Eastern Transvaal, Lydenburg, Barberton, and Pietersburg districts could combine into a kind of corporate body to pool their stores direct from the manufacturers it would help them to continue work instead of many of them closing down under the burden of high costs, and you, Mr. Editor, could help in that matter (1) by drawing the attention of the indifferent or unwary small workers, (2) by giving quotations of principal stores in your commercial section, including prices for cyanide and zinc which are seldom if at all quoted.—Yours, etc.,

J. L. SHIKAIDY.

"THREE FIVE MILE THICK GEOLOGICAL AGES."

To the Editor, *S.A. Mining and Engineering Journal.*

In the course of a characteristic and interesting letter to the Editor of this journal, Mr. Scott Alexander, "The Rand Stratigraphist," writes: This country contains three five-mile-thick auriferous geological ages ahead of the rest of the world, as your readers may be tired of hearing from me. Our gold supply is inexhaustible, and the few mines grouped round about Johannesburg, for convenience sake, do not represent a five-thousandth part of the number of holes in the ground that posterity will yet make to help themselves to the precious metal as long as it remains the medium of currency. That's the rub! For if our platinum fields in the Cape Colony prove to be half as rich as reported its supply might in a few years surpass the world's output of gold—and what then?

With regard to the three five-mile-thick geological ages above alluded to, which South Africa has, and the rest of the world has not, I will just give you a rough estimate of their potentialities cut down to half the distances which I am convinced they reach if our coal-measure age, which covers them to a great extent, could be peeled off to expose them. First, The Lydenburg age: Three payable reefs, 300 miles long = 900 miles. Second, the Witwatersrand age: Fifteen payable reefs, 300 miles long = 4,500 miles. Third, the Black Reef age: 300 miles long, 6 payable reefs = 1,800 miles. Total, 7,200 miles of payable reef if joined end to end.

This does not include the auriferous schistose age, of which we have as much as, and probably more than, any other country, but at present is greatly neglected on account of the more easily worked banket beds of the Witwatersrand and Black Reef ages. Home readers would be well advised not to refer to our Geological Survey reports for information re South Africa, as it is absolutely useless from an economic point of view. They must come here and investigate for themselves.

Coaling at Delagoa.

A telegram from Lourenço Marques, dated Tuesday, stated: Repairs to the big coaling plant which broke down about a fortnight ago are now finished, and it is expected that the installation will be in full work in a few days.

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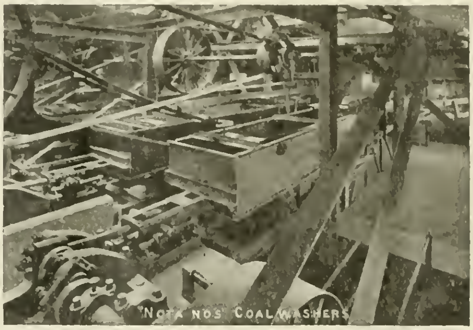

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RHODESIAN SECTION.

Rhodesia's Record Output.

CHAMBER OF MINES REPORT FOR FEBRUARY—PRODUCTION WORTH OVER THREE-QUARTERS OF A MILLION— HUGE ADJUSTMENTS IN RESPECT OF ASBESTOS AND GOLD—LOMAGUNDI PRODUCING FIBRE—THE POSITION AT THE FALCON.

The Rhodesian mineral industry is now recuperating from the effects of the recent calamitous strike, and as an offset to the depression caused by that ill-starred effort of Rhodesian labour it is encouraging to note that the mineral output for February was a record at over three-quarters of a million in value. It should, however, be made clear that more than half this total was made up of huge adjustments in respect of the gold premium and on the sale of asbestos. In point of fact the general position of the Rhodesian mining industry is not altogether satisfactory. It is true that asbestos production is advancing, but on the other hand high costs and the continuance of low prices for metals is seriously affecting other mines, and particularly the Falcon.

As we stated in our last issue further drastic reductions are announced from this mine, which is one of the largest in the country. A large number of staff and employees, in addition to those already paid off, have been given notice. It is fully understood in the district that if the mine has, unfortunately, to close down, there would be no hope of its reopening, nor is it a property, owing to the very costly form of reduction necessary, that would be taken up by a tributor.

The report of the Executive Committee of the Rhodesia Chamber of Mines on the output of gold and other metals and minerals for the month of February states:—

Native Labour.

The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of December, 1920, and January, 1921:—

	December.	January.
Local	8,117	7,703
Portuguese Territory	4,963	4,941
Northern Rhodesia	10,854	11,224
Nyasaland	14,708	14,457
Other sources	622	547
	39,264	38,872

The number employed in January, 1921, shows an increase of 5,956 as compared with the corresponding month in 1920

The Mines Dispute.

The mines dispute, which began at the Shamva mine on February 18th and led up to a cessation of operations on all the mines in the territory, except three, was terminated on the 21st of March, when an agreement was arrived at and signed by the Rhodesian Mine Owners' Association, the Amalgamated Engineers' Union, and the Rhodesian Mine and General Workers' Association. A copy of the agreement has been forwarded to each member of the Chamber. A verbatim report of the proceedings at the conference between the above Associations and Union, at which the agreement was arrived at, is available for reference by members of the Chamber at any time.

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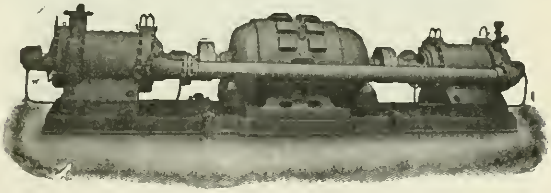

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Proposed Legislation.

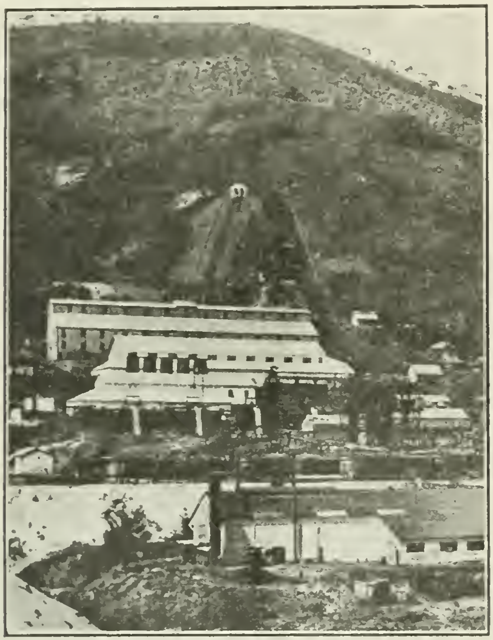
It is intended by the Administration to introduce the following Ordinances at the forthcoming session of the Legislative Council, viz.: (1) Workmen's Compensation Ordinance, (2) Road Councils Ordinance, (3) Vehicles Tax Ordinance. All these measures affect the interests of the mining industry and will receive the most careful attention of the Executive Committee of the Chamber.

Rhodesian Native Labour Bureau.

A conference was held in Salisbury on the 23rd February to consider the reorganisation of the finance and operations of the Labour Bureau. For some years farmers have received far more natives from the Bureau than the mines and, whilst only paying the same capitation fee, they have been exempt from the monthly labour tax levied on the mines. It is satisfactory to note that at the recent agricultural congress the farmers have agreed to pay an extra 10s. capitation fee, which will be pooled and distributed amongst the mines pro rata to the amount of taxation paid by the latter.

Committee of Enquiry into the Supply of Native Labour.

A Committee of Enquiry has been appointed by the Administration for the purpose of making recommendations regarding the best method of maintaining and increasing the supply of native labour, with special reference to the entrance into Southern Rhodesia of natives from adjoining territories. The Committee consists of the Secretary for Mines (Chairman) and Messrs. George Mitchell, Theo. Haddon and H. C. Marshall, and will commence its sittings in Salisbury on the 30th March.



At the Shamva Mine

The Railway Conference of Southern Rhodesia.

The fifth meeting of the Railway Conference took place on the 17th and 18th of February, at which the formation of a Railway Rates Advisory Committee was approved, the functions of such Committee being to examine, advise and report upon all questions of railway rates and charges which may come before it, but shall not include investigations into the general policy, management or working of the railways.

Price of Silver Reduced.

As from the 1st March the price paid by the local banks for silver is 1s. 9d. per fine ounce.

Output of Gold and Other Minerals.

The total value of the gold and other minerals from Southern Rhodesia for the month of February, 1921, amounted to £771,678 as compared with £404,609 for the previous month of January. The February output included £102,845 premium on gold and £328,410 adjustments on sales of asbestos during the period 1/4/19 to 31/12/20.

Asbestos—Some Big Adjustments—Production from Lomagundi, February, 1921.

	Tons.	Value £.		
Bulawayo District.				
Ad Valorem (Ad Valorem Asb. & Mining Co., Ltd.), Dec.	7·80	218	18	0
Birthday A. & B. (Willoughby's Cons. Co., Ltd.)	228·72	7,707	8	3
Croft 1 (African Asb. Min. Co., Ltd)	50·50	757	10	0
Nil Desperandum (do.)	313·00	7,825	0	0
Serpentine (A. Asb. Min. Co., Ltd.)	11.00	275	0	0
Shabanie (R. & Genl. Asbestos Corp., Ltd.)	550·68	13,767	0	6
Do. adj. 1/4/19—31/12/20	—	208,399	15	2
Lomagundi District.				
Ethel (Union & Rhodesian Trust, Ltd.)	65·97	1,649	10	0
Victoria District.				
Balmain (African Asbestos Min. Co., Ltd.)	89·17	2,229	7	6
Gath's (R. & Genl. Asbestos Corp., Ltd.)	297·13	7,428	5	0
Do. adj. 1/4/19—31/12/20	—	120,010	12	0
King Asbestos (Rhod.), Ltd.	613·48	2,650	14	8
	2,227·45	372,918	11	1

Summary of Mineral Production, February, 1921.

		Value £
Gold, 10,816·06 fine ozs.		208,226*
Silver, 10,516·82 fine ozs.		3,010
Coal (raised 41,499 tons)	(sales)	12,640
„ used for Coke and Bricks		7,403
Copper (Blister), 231·77 tons		48,931
Chrome Ore, 9,324·74 tons		36,125
Asbestos, 2,227·45 tons		372,918†
Arsenic, 17·46 tons		698
Mica, 6 tons 938 lbs.		1,617
Diamonds, 23 carats		110
Total		£771,678

* Includes £102,845 premium on gold.

† Includes £328,410 adjustments on sales of Asbestos, 1/4/19 to 31/12/20.

Grand Totals Gold and other Metals and Minerals, and Precious Stones, output to date.

Gold, 11,802.31 ozs.		£48,866,361
Silver, 2,993,873 ozs.		395,826
Lead, 7, 072.17 tons		94,788
Copper, 22,161·24 tons		1,958,995
Chrome Iron, 691,718·71 tons		2,164,251
Tungsten Ores, 216·65 tons		26,146
Coal (raised), 5,081,188 tons	(sales)	1,880,147
Antimony Ore, 79·11 tons		1,550
Asbestos, 61,548.82 tons		1,805,896
Arsenic, 920·75 tons		37,140
Ironstone, 29,604·42 tons		4,198
Tin, 14.68 tons		2,671
Barytes, 53·66 tons		88
Mica, 123 tons 654 lbs.		31,660
Diamonds, 13,557·125 carats		62,827
Other Precious Stones 72,977 carats		8,065
Grand Total Value of Mineral Production to date		£57,340,609

NORTHERN RHODESIA.

Mineral Production for February, 1921.

Gold, 195·61 ozs.	£821	10	1
Silver, 31.36 ozs.	3	4	4
Lead, 1,360·80 tons	20,412	12	0
Copper Concentrates, nil	nil.		
Copper Finished, Adjustment	123	11	3
Zinc Ore, nil	nil.		
Bismuth, nil	nil.		
Mica, nil	nil.		
Vanadium, nil	nil.		
	£21,360	17	8

The Week in the Sharemarket.

BRITISH LABOUR STRIKES AFFECT LOCAL BUSINESS—NO FEATURES, AND A DULL WEEK.

The local share market, after opening at the beginning of the week in a more hopeful strain, has reacted in consequence of the strikes and threatened strikes in England. At the moment of going to press business generally is at a standstill. Far East Rand stocks are firm, and there has been a better undertone in the diamond market, while tin, coal and industrial shares have been inactive. Speaking generally, the week's share market has been featureless. Below is our usual weekly report:—.

	Fri. 8th.	Sat 9th.	Mon. 11th.	Tues. 12th.	Wed. 13th.	Thurs. 14th.
Anglo-Am. Corp.	19 3*	19 3*	19 3*	19 3*	19 6	19 3
Apex Mines	6 6*	6 6*	6 6*	—	—	6 7*
Bantjes Cons.	4 7	4 6*	4 7½	5 3	5 10*	5 6*
Brakpan Mines	48 0	—	50 0†	46 0*	45 0*	48 9†
Brick and Potteries.	4 3*	4 6*	—	4 6*	4 6*	4 6*
Bushveld Tins	0 6*	0 6*	0 6*	0 6*	—	—
Cinderella Cons.	2 3†	—	—	—	2 3†	—
City and Subs.	—	7 0†	—	—	—	
City Deeps	—	38 0*	39 0*	40 6	4 0*	40 0*
Clydesdale Colls.	25 0*	25 0*	—	25 0*	25 0*	25 0*
Con. Diamonds	13 0	13 0*	13 3	14 3	14 1*	13 3*
Con. Investments	—	22 0*	—	22 0*	—	
Con. Langlaagtes.	10 6*	10 0*	10 6*	11 3*	11 0*	11 0*
Con. Main Reefs	10 1*	10 1*	10 3*	10 3	10 0*	10 3
Con. Mines Select.	14 0†	—	—	—	—	—
Coronation Freeholds	0 10*	0 10*	0 10*	0 9*	0 9*	0 9*
Crown Diamonds	2 9*	2 9*	2 11	3 0	3 0	2 7½
Daggafontein Mines.	2 10½	2 9*	3 0	3 3	3 0*	2 11*
Durban Rood. Dps.	2 6*	2 6*	2 6*	2 6*	2 6*	2 6*
E.R. Coals	2 0	1 10*	1 11*	1 11*	2 0	1 10*
E.R. Deeps	—	0 6*	—	0 7*	0 7*	0 7*
E.R. Minings	—	—	5 0*		5 0*	—
E.R. Props.	4 0*	—	4 0*	4 6*	4 9*	4 9*
E.R. Debentures	—	£70†	—	—	—	£70†
Eastern Golds	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Frank Smith Dmds..	2 10	2 11	2 11	3 0	3 1	3 0
Geduld Props.	47 0	46 9	47 0	47 3	46 9*	46 3*
Glencoe Colls.	11 6†	10 9*	11 3†	10 9*	10 9*	11 0*
Glynn's Lydenburgs	—	—	9 0†	8 0†	7 6*	7 6†
Govt. Areas	78 6	78 3	78 3	78 6	77 9*	77 6*
Hume Pipes	19 0*	19 0*	19 0*	—	—	—
Jupiters	3 5*	3 7	3 7*	3 9†	3 7½	3 6*
Knight Centrals	3 9*	3 9*	3 10	3 10*	3 10*	1 1*
Knights Deeps	14 6*	14 9	14 6*	15 0	14 9*	14 9*
Lace Props.	8 0†	—	7 3*	—	7 6*	7 3*
Leeuwpoort Tins	5 6	6 3*	6 0*	6 3*	6 3*	6 3*
Lydenburg Farms	4 6*	4 6*	4 6*	4 6*	4 9*	4 9*
Modder B.'s	24 10*	24 0	23 9*	24 3	24 6	24 0*
Modder Deeps	42 4½	42 0*	42 3*	42 9	42 3	41 9
Modder Easts	10 1½	9 9	10 0	10 6	10 3	10 1*
Do. Opts. (4 yrs.)		0 3†	0 3†	—	0 1*	
New State Areas	20 9	20 0*	20 3*	19 6	19 6*	19 3*
Natal Nav. Colls.	—	30 0*	—	30 0*	32 0†	32 0†
National Banks	220 0†	220 0†	220 0	220 †	220 0†	—
New Eland Diamonds	—	17 0*	17 6	19 6*	20 0*	20 0*
New Era Cons	6 6*	6 6*	6 9	—	—	5 9*
New Geduld Deeps	1 3*	1 3*	1 3*	1 3*	1 3*	1 4*
New Kleinfontein	5 8*	5 6*	5 6*	5 6*	5 6*	5 6*
New Modders	63 6*	63 3	63 0*	64 6c	63 3	63 0
Nourse Mines	7 3	—	7 9*	—	—	7 0*
Premier Pref.	105 0*	105 6*	105 0*	105 0*	—	110 0†
Pretoria Cements	45 9	45 3*	46 0*	48 6	49 0	48 0a
Princess Estates	0 9†	0 8*	0 6*	—	—	0 8*
Rand Collieries	—	—	—	—	1 6†	1 6†
Rand Nucleus	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
Randftn. Centrals	8 6*	9 0	8 0*	9 3*	9 0*	—
Randftn. Estates	14 0	13 9	13 9*	14 6	14 6*	14 0*
Roberts Victors	—	—	7 0*	7 6*	7 6*	8 0*
Rooibergs	3 0*	3 0*	3 0*	3 1*	3 0*	3 0*
Roodepoort Uniteds	—	0 9†	—	0 9†	0 9	0 9†
Ryan Ngeils		—		3 9*	3 9*	3 9*
S.A. Breweries	27 0*	—	26 0*	—	26 6*	26 6*
Springs Mines	30 6	30 0*	30 0*	31 3	30 6	30 3*
S.A. Lands	3 11*	3 10*	3 10*	—	3 10*	3 9
Sub-Nigels	11 6*	12 0	11 9*	11 10*	11 9*	11 7*
Swaziland Tins	5 6*			5 6*	5 6*	5 6*
Trans. G.M. Estates.			7 0*	—	7 6*	7 6*
Van Ryn Deeps	70 3	69 0*	70 0	71 0	70 0	69 0*
Village Deeps	7 0	6 6*	6 6*	6 6*	6 6*	6 6*
West Rand Cons.		2 6†	—		—	
Western Rand Est.	2 6	2 6*	3 0†		3 0†	2 9*
Witbank Collieries		—	44 0	44 0	43 9*	44 0
Wit. Deeps	6 9*		7 0†	6 3†	6 3*	6 3*
Wolhuters	3 11	3 9*	3 10*	3 10*	3 10*	4 3†

	Fri. 8th.	Sat. 9th.	Mon. 11th	Tues. 12th.	Wed. 13th	Thurs. 14th.
Zaaplaats Tins	2 7*	2 6	2 6*	2 9	2 6*	2 6*
Rouxvilles	2 6*	2 3*	2 0*	2 2*	2 6	2 3*
South Van Ryns	4 0†	3 3*	3 0*	4 0*	4 0†	4 0†
S.A. Townships	8 9	8 9*	9 0*	—	10 0	9 9*
S.A. Alkali	16 6*	17 9	17 3*	17 6	17 6*	18 0*
Do. Options	1 0*	—	—	—	—	—
Transvaal Silvers	24 0	24 0*	24 6	24 9	25 6	25 6*
Tweefontein Colls.	20 0*		—	—	20 0*	—
Union Corp.	16 6*	16 6*	—	16 6*	—	16 6*
Van Dyks	1 3*		—		1 6	1 5*
West Springs	12 0	12 3	12 6	12 9	12 9	12 6
Do. Options	—		0 3	—		—
De Beers Def.		£10⅜*		£10½*	—	—
De Beers Pref.		£10¼*	—	£10¼		£10½*
New State Areas	20 9	20 0*				—
Union 5 per cent.	£96½	£96½	£96½	£97*	£97*	£97½*

Kolmanskop Diamonds.

The report of the directors of the Kolmanskop Diamond Mines, Ltd., submitted to shareholders at the twelfth annual general meeting, on 31st March, states: The capital of the company remains as before at £125,000. The reserve of £12,500 has since been issued in part payment of the purchase price of additional mining area mentioned in last year's report. The property known as Northern Fields consists of 44 claims (Schurffelder) under a concession by the Deutsche Kolonial Gesellschaft for a term of 50 years from 1st September, 1908. The area embraced in the 44 claims measures 4,100 hectares (about 10,000 acres). The Southern Fields, the purchase of which was effected as from 1st January, 1920, consist of 3,140 hectares, or 7,800 acres. Of the Nethern Fields, 786 hectares have been totally worked out; while in the case of the Southern Fields the area totally worked out during 1920 was 61 hectares. In addition, the Field "Albatross," belonging to the Vereinigte Diamanten Aktien Gesellschaft, worked by your company against a share in the nett profits, was totally worked out in May last, and has now been abandoned. The output during the period under review was as follows: Northern Fields, 51,806·50 carats; Southern Fields, 5,584·30 carats; or a total of 57,414·80 carats The difficulty in obtaining spare parts of machinery also existed during last year, but as these parts have now been purchased, the work of putting the company's plant in thorough order is being carried out. The attention of shareholders is drawn to the accompanying accounts. The improvement in the diamond market reported last year was maintained during the first four months of 1920, and as a result thereof the balance of the company's production for 1919 which remained unsold at the date of the last report, has, according to a provisional statement, realised an estimated additional profit of £6,466 12s. 9d. So far as the production for 1920 is concerned, information has only been received of the sale of the output to the 30th June in the case of the Southern Fields, and to 15th July in the case of the Northern Fields. Seeing that the sales to these dates have realised an average price of 82s. 6d. and 135s. per carat for the production of the Northern and Southern Fields respectively, the diamonds which remain unsold have been taken into account at a very conservative estimate. The accounts also show a balance of profit of £4,383 13s. 5d. derived from the sale of the so-called "Seitz" stones. These diamonds appeared in last year's accounts under the heading of "Diamonds Unsold" (pre-war), and were included in the amount of £3,165 1s. 11d. Advices have now been received that the sale of these stones realised a gross revenue of £13,995 14s. 6d. After allowing for Government duty and selling charges, the profit to this company has been estimated as above.

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Phone 1670.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES *vs.* **BAR FRAMES."**

The Railways are the largest users of THERMIT WELDING COMPOUND in South Africa.

WHY? Because it has saved them thousands of pounds sterling in repairs.

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LARGE STOCKS ON HAND.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

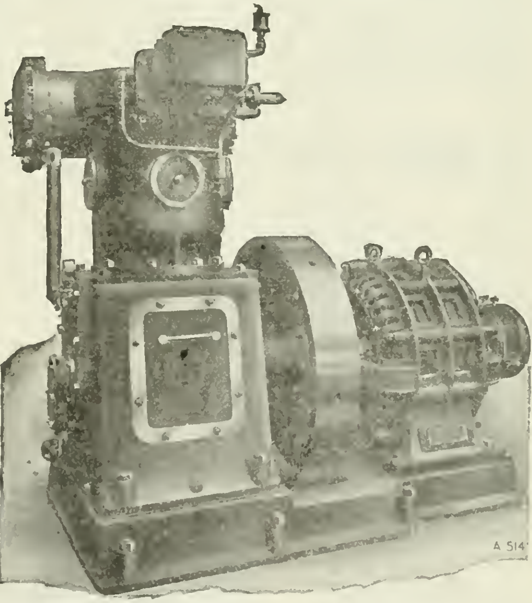
GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—FINANCE—COMMERCIAL BREVITIES.

General Position.

The outlook in Britain regarding the coal crisis, which two days ago had apparently altered so much for the better and in the opinion of at any rate some good prophets was about to see a satisfactory settlement, has unfortunately changed for the worse. The view was generally held in business circles in mid-week that the British Government had got the miners "beat," and it comes as a disagreeable surprise to find that the "Triple Alliance" have thrown in their lot with the coal miners and announced their intention to strike. At the moment of writing no silver lining is apparent and things are looking very black indeed. Locally there is no easing off in money conditions. Once consumers start legitimate trading operations there is bound to be an improvement in trade; the latter are of course waiting to see some return to normal prices. As a general statement it may be said that business is at the moment exceedingly quiet and prices very low; indeed far below costs of replacement. Until the European trouble is settled one cannot expect any permanent improvement. Should the coal strike on the other side last any length of time we shall experience here a temporary improvement, but only a temporary one. Things are, however, at the moment in the crucible and one must await developments as best one may. Merchants here are feeling the effects of German and Belgian competition. The British workman, it is feared, will also have a similar experience. Let us hope that his awakening will not be too late. Markets once lost are hard to regain, and we have at any rate not been gaining much new ground lately.

Iron and Steel.

Business has been in a waiting mood. There has been little doing on the Commercial Exchange; things have dragged. At the moment merchants are looking forward hopefully to a betterment in conditions in two or three months' time. As regards prices, these are still being disorganised by weak holders being forced to sell at best. The banks and other financial institutions have to play their part in the general game, and clients are now and then being squeezed. Latest quotations: Imported iron and steel, flats, smalls, 40s. to 50s.; larger sizes, 38s. 6d. to 55s.; ¼in. rounds, iron and steel, 69s. 6d.; 5-16in., 62s. 6d; ⅜in. iron, 58s. 6d.; steel, 41s.; 7-16in., 44s.; ½in. and ⅝in. round, iron, 32s. 6d.; mild steel, 43s.; ¾in. iron and steel, 42s. 6d.; ⅞in. to 2in. iron rounds, 39s. 6d.; larger sizes in iron, 52s. 6d.; 1in. to 3in. mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅝in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d. to 47s. 6d; shafting, 3-16in., 1s. 2d.; ⅜in., 1s. 1½d.; 7-16in., 1s. 1d.; ½in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d. to 8¾d.; larger sizes, 7½d. to 8d.; spring steel, flats, 8½d. to 9d. per lb.; mild steel plates, 1-16in., 42s. 6d.; ⅛in., 41s. 6d; 3-16in., 40s.; ¼in., 37s.; 5-16in., 36s.; ⅜in., ½in., ⅝in., ¾in. and 1in., 35s. to 41s.; bolts and nuts, ⅜in., 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d. per 100lb.; ⅝in., 66s.; ¾in., 64s.; nuts, ⅝in. and ¾in., 87s. 6d.; fishplates, bolts and nuts, ⅜in., 1s. 4d.; ½in., 9½d. per lb.; ⅝in., 72s. 6d; ¾in., 68s. 6d. per 100lb.; dogspikes, 43s. per 100lb; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d.; ½in., 64s.; ⅝in., 60s. 6d. per 100lb.; tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜in. round, 1s. 10d.; ½in., 1s. 8d.; ⅝in. and upwards, 1s. 6d. per lb.; ½in., 1s. 9d.; ⅝in. and upwards, 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 6d. per lb.; drill steel, 7½d.; hollow, 1s. 0½d.; wire nails, 42s. 6d. to 57s. 6d; shovels, 70s. to 75s.; wheelbarrows, 67s. 6d. to 72s. 6d.; picks, 15s. to 75s.; pick handles, 35s.; barbed wire, 33s. 6d. to 42s. 6d.; fencing wire, 30s. to 50s.; screening, 3s. to 10s. square yard. Dunswart's prices have been reduced from 33s. to 29s., the Union Steel Corporation are, we understand, also going to cut their quotations, but in the meantime their prices are: for small flats, 41s. 6d.; ordinary sizes, flats 40s., rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; large sizes, 41s. 6d.



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Engineering Shops.

Although the position at the moment may not be better, there is a more cheerful tone as regards future prospects, as importers of machinery have frequently to replenish their stocks of spare parts from local suppliers. The local manufacturers [illegible] the scope and [illegible] engineering activity in some respects a monopoly which, they think, tends to put things into the hands of the trade unions. As showing the present position of some of the leading producers of iron and steel, it is reported that at Cleveland pig-iron is being sold at 126s. below the cost of production, the producers choosing to sell at that figure rather than close their works.

The Engineering Employers' Federation have announced their determination to carry out the general reduction of wages of 6s. weekly for time-workers, and 15 per cent. for piece-workers in addition to 12½ per cent. on the earnings of time-workers.

Falling Costs in Britain.

"The Economist" gives the wholesale prices of commodities at the end of March as 5,097, compared with 5,176 in February, the principal fall being in minerals.

Messrs. Armstrong, Whitworth and Co., Ltd., despite very keen competition, have secured an order for 200 locomotives for Belgium. The firm is receiving orders at present from all parts of the world, including South Africa. Their latest contract is the construction of a railway from Bute to Metta, and the erection of workshops for the Nigerian Government; also the erection of equipment for locomotive, carriage and wagon shops, sawmills, and an electric power station, to be completed within two years.

Timber and Building Materials.

Business has been quiet this week. Deals and scantlings are slightly easier at 1s. 6¼d. to 1s. 7¼d.; floorings, 10d.; ceilings, 7d.; beaver board, 5¼d.; pitch pine, 10s. 6d.; Oregon, 9s. 6d. a cube; corrugated iron, 24 gauge, 10d. to 11½d. Furniture Timber: Japanese oak, 1s. 10d. to 1s. 11d. per square foot; Burmah oak, 25s.; American oak, 1s. 9d. to 1s. 10d.; 1in. boards, 21s. 6d. to 25s. per cubic foot; American black walnut, 1s. 10d.; West African mahogany, 2s. 3d. per square foot. Trading in the second-hand yards is only middling, prices remaining unchanged, viz., 1s. 2d. for timber and 6d. to 8d. for iron. Stock bricks are ruling at 70s.; mixed bricks, 60s.; wire cuts, £4 10s. to £5; and pressed bricks, £5 per 1,000 at yard. Blue lime, 1s. 3d.; plaster, 5s. 3d.; cement, 11s. 6d. per bag. Damp course and roofing, 10s. to 65s.

Dumping efforts by Germany to forestall the economic sanctions have resulted in a glut of some 5,000 cases of glass and hardware in Britain, and it is reported that goods

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ISSUE PRICE—£97 10s. 0d. per **£100** Stock.

INTEREST at 6 per cent. per annum payable half-yearly, on the 1st, January and the 1st July in each year.

(*The yield from the Stock on the above terms is equal to* £6 3s. 8d. *per cent. per annum, allowing for redemption at par in* 1950).

The Rand Water Board gives notice that it is prepared to receive applications for the above-mentioned Stock, free of exchange, at all the South African Branches of—

The National Bank of South Africa, Ltd., and
The Standard Bank of South Africa, Ltd.

Prospectus and Form of Application

and any further information which may be required regarding this issue of Stock can be obtained from the Secretary, Rand Water Board, P.O. Box 1703' Johannesburg, or at any Branch of the above-mentioned Banks.

are pouring in from Holland. But these goods will not be released before the Customs authorities have satisfied themselves that they were purchased before 8th March

Electrical Goods.

There is no change to report in this section; business is slow and orders are coming in very slowly. Prices are much the same; the tendency is a downward one in face of local financial pressure, but stocks coming in do not show any abatement in costs but rather the reverse. Half-watt lamps, for which there is a big demand, are still on the way.

Shipping.

It is estimated that ships aggregating 5,000,000 tonnage are now laid up in Britain. The outlook is worse than it has been for years, and shipowners, according to latest advices, are cancelling orders for ships placed.

Coal.

Bunker coal, by reason of the British strike, has risen 10s. per ton in Antwerp.

Finance.

The decision of the British Government to revert to the pre-War system of offering Treasury bills weekly by tender instead of fixed rates, as has been the ease during the past four years, is looked upon in financial circles as a very hopeful sign of returning financial stability.

Bank of England Rate.

A decline in this was thought probable this month, but the disorganisation in business and financial affairs on the other side has, of course, precluded any reduction.

Locally the financial stringency remains as acute as ever, and no relief is expected before the end of the half year enables institutions to release some of their capital and ease up forcing tactics.

Commercial Brevities.

Oil.

Earl Curzon, in the House of Lords, has stated that America produced 70 per cent of the world's oil and controlled a further 12 per cent. outside.

San Remo Oil Agreement.

Negotiations are about to take place between Britain and America to accelerate the adjustment of differences.

Metal Market.

Latest London quotations: Standard copper, £69 6s. 3d. cash, £69 6s. 3d. forward; electrolytic copper, £72 10s. 0d. cash and £74 forward; Straits tin, £163 2s. 6d. cash and £165 15s. forward; lead, £20 15s. cash and £21 5s. forward; silver, 34½d. per oz.; and fine gold, 104s. 10d. per oz.

An Investment for Miners.

In our advertisement columns will be found particulars of the Orangia Estates' offer to sell, on the five annual instalment system, small orchards planted with specially selected orange trees. The directors undertake to give full attention to the orchards during the five years, and when the trees produce fruit they will hand the orchards over to the purchasers who may occupy it they wish and are assured of a certain income. The ground is freehold and the title deeds are deposited in the Standard Bank. Inspection is invited to visit the estates, where there are trees from five to ten years old, and said to be bearing this year from 300 to 1,200 oranges. The directors state that intending purchasers may count the oranges on the trees and satisfy themselves that they are not buying a "pig in a poke." Men on the mines, and particularly those suffering from miners' phthisis, who wish to learn more of this offer of investment are asked to apply for the illustrated booklet and get full particulars as to terms of payment and conditions of sale. The advertisement, we note, does not state where the property is situated, except that it is amid mountain and river scenery; nor is the price per acre mentioned; but no doubt all this is explained in the booklet.

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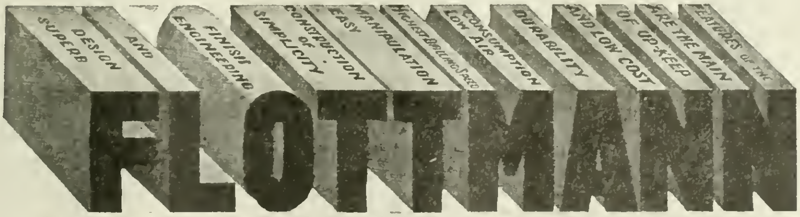

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Muizenberg and Cape Peninsula -	Matchless for marine, woodland and mountain scenery. Excellent bathing.
Hermanus - -	Off the beaten track. Romantic surroundings, excellent fishing, good boating.
Somerset Strand -	Quiet and rustic; essentially a place for family parties. Delightful bathing.
Mossel Bay - -	Good sea bathing, equable climate, famous scenery at Wilderness, George, etc.
Port Elizabeth (Humewood) -	Urban attractions of wealthy town, combined with healthfulness of bracing seaside resort.
Jeffrey's Bay -	Mild Climate. Beautiful shelly beach. Safe bathing, sea and river fishing.
Port Alfred - -	Golf course—one of the best; river boating, fishing, sea bathing.
East London -	Camping on beach feature of season; excellent sea bathing, delightful river.
Durban and North & South Coast Resorts -	Premier South African winter residences. Sub-tropical surroundings, refreshingly novel.

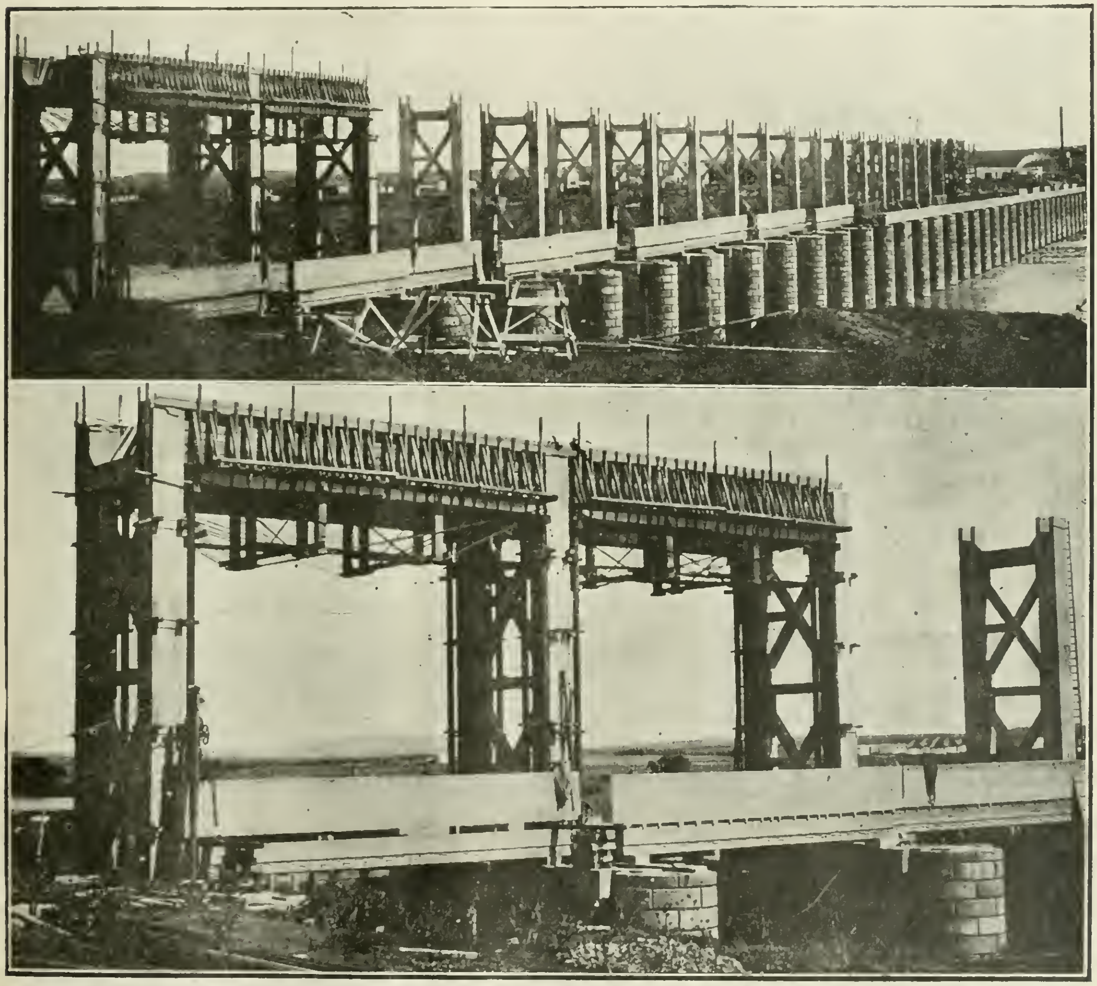
W. W. HOY,
General Manager.

Johannesburg.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXI., Part 1   JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 23, 1921.   1543.

The Great Vaal River Barrage.



These two photos illustrate the splendid progress being made with the erection of the great Vaal River Barrage of the Rand Water Board. Five months ago we printed a photograph showing some of the completed piers before the imposing reinforced concrete superstructure was begun. The above pictures show the finishing stages of the superstructure designed to carry the "Goliath" 30-ton crane and massive steel gates.

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The Case for Selective Mining.

HOW OUR MINES CAN ENORMOUSLY INCREASE PROFITS—WHY THE RAND SHOULD MAKE HAY WHILST THE SUN OF THE GOLD PREMIUM SHINES—QUESTION OF DISPOSAL OF INCREASED REVENUE AND STABILISATION OF DIVIDENDS—100 PER CENT. FROM VAN RYN DEEP, 200 PER CENT. FROM MODDER DEEP, and 175 PER CENT FOR THE NEW MODDER SHAREHOLDERS—MILLIONS LOCKED UP IN RESERVES YEARS AHEAD OF MILLING REQUIREMENTS—A FASCINATING PROBLEM IN FINANCE—PROFITS SACRIFICED TO THE FETISH OF REGULARITY.

In this important article we return to a consideration of the case for the adoption of selective mining on the Witwatersrand. Several of the less profitable mines of these gold fields recently have had to mine and mill ore of an average value in excess of the average value of their reserves in order to survive the prevailing period of high cost of working. In this article it is argued that the richer propositions of the Far East should adopt a similar policy and should win every ounce of gold they can whilst the " premium " lasts

In our last issue we published an article on the subject of what is generally termed " selective mining," which is in effect the mining and milling of ore having a value in excess of the average value of the ore reserves of the mine.

Intricacies of the Problem.

The subject is a highly complex one and in last week's issue we dealt at length with some of the intricacies of the problem and alluded to the outstanding points in favour of the pursuance of such a policy and the essential objections to " over mining." We do not propose to reiterate these.

The Premium.

But the point which we do wish to emphasize here is that the incidence of the gold premium plays a vastly important part in this matter—a part which has not, we think, received the attention it deserves.

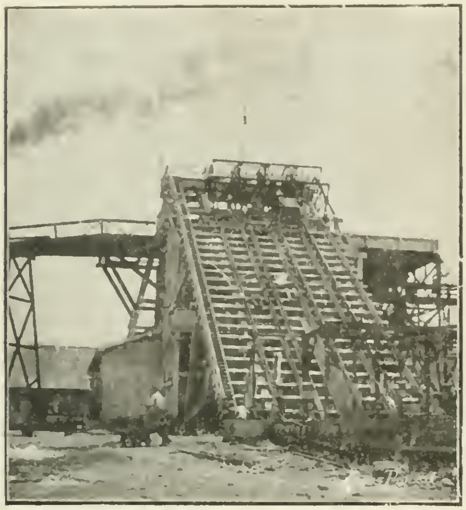
In our opinion (and this view is supported by several leading mining engineers and by large shareholders as well) a vast increase in profits can be secured by the adoption of a policy of intensive selective mining during the period of the maintenance of the " premium " on gold and particularly so when gold is at a high price as it was a few months ago and as it may be again when the effect of the American exporting season is felt. We do not think it will be disputed that if any one of the large mines of the Far East Rand were the individual property of one man the owner would not hesitate to sell the maximum output he could produce at the highest figure obtainable.

The essence of the business of gold mining is, or should be, the winning of the greatest profit for shareholders. If the rich Far East Rand propositions took full advantage of the premium and crushed only the richest ore obtainable without reference to the average value of the ore in reserve profits would be immeasurably increased. If this were done it is probable that the Van Ryn Deep, for example, easily could pay dividends of at least one hundred per cent. per annum. The Modder Deep similarly could yield two

Where "selective mining" is practised. A South African Diamond Mine. Our Diamond Mines are not slaves to the fetish of regular monthly returns. They produce as many diamonds as they can sell at the best price. Why should not the Gold Mines do likewise and produce the maximum amount of gold whilst the metal is at a premium?

hundred per cent., and it would be within the ability of the New Modder to distribute certainly not less than 175 per cent. The dividends of other Far East Rand propositions would appreciate in a similar degree.

The effect of such a policy on share values is not difficult to calculate. The enhanced return to shareholders may be worked out of a hypothetical case where a mine has a life of, say, 18 years and has an ore content of an average value of 9 dwts. per ton.



A Headgear on the West Central Rand.

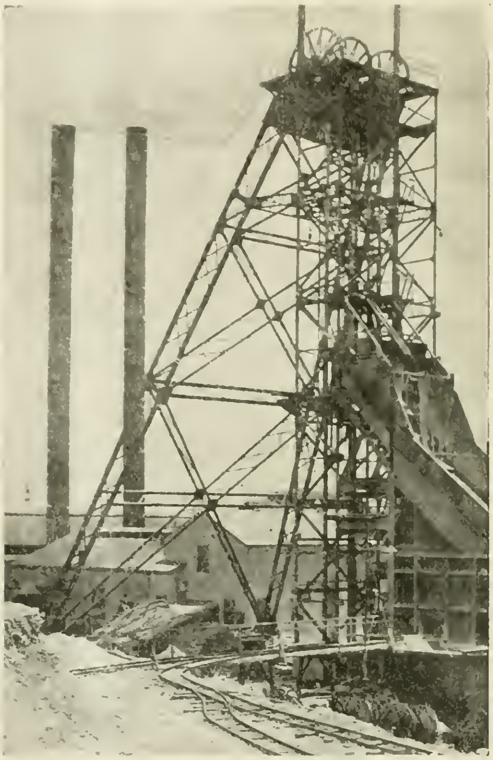
Regularity of Profit.

Under present circumstances the aim of the non-technical administration (the board of directors) is to crush ore corresponding to the average value, that is, maintain a steady recovery of nine dwts. per ton throughout the life of the mine.

But if instead of doing this the life of the mine was divided into three periods each of 6 years, and if for the first period ore of 12 dwts. value was sent to the battery and for the second period ore of average or 9 dwts. value was crushed, and for the final period ore of 6 dwts. grade was stamped and treated, the total profit secured from the mine (having regard to interest on dividends and the fact that the premium on gold will probably not last for more than a few years) would be very much greater than that which is being obtained by the prevailing policy of endeavouring to maintain average returns.

Steadiness of output is a fetish to which the dividends of our mines are being sacrificed.

If the boards of Rand mining companies made it clear by circular and in annual speeches that the policy of the mines would be to practise selective mining and to earn the maximum profit of which the mines are capable we think that shareholders would willingly concede any advantages which the system of maintaining a regular output may possess.



The Modder Deep. A rich Far East Rand venture that could enormously increase its profits by milling ore from its highest grade stopes.

Selective mining on the Rand. A Rand shaft and Battery.

What the Aim of the Boards Should Be.

Let the mining companies make it perfectly clear to the public at large that the mines are in future to be worked for the largest possible aggregate profit, that returns will fluctuate, and that when the richest ore is exhausted the earnings will decline greatly unless there is a very big reduction in the cost of working.

How Dividends Could Be Steadied.

The large sums of money recovered by the mines need not be distributed at once.

The additional profit earned could be invested in sound gilt-edged security. It might be placed on fixed deposit with a bank and yield 1½ per cent. which interest is lost to shareholders to-day because the gold is allowed to remain in the ground in the interests of regular returns.

By this means a dividend reserve account might be created, the function of which would be to maintain a steady rate of distribution.

Or it might be considered policy to establish with other companies a large joint reserve to be employed in the development of new areas on the Far East Rand. In any case it can clearly be proved that the total profit recoverable from a mine can be largely augmented by practising selective mining whilst the ephemeral gold premium lasts. Profits, too, can be increased by adopting a policy of keeping ore reserves within reasonable bounds. A strong ore reserve position is undoubtedly a fine possession. But the accumulation of reserves can be carried to a point where it is unprofitable to lock up more money in reserves which are already several years ahead of milling requirements.

We have no doubt that many directors of the old and conservative school will shake their heads at these somewhat revolutionary ideas and will declare that the adoption of the ideas suggested in the foregoing would sooner or later react on the Rand in a disastrous manner. We are well aware that the whole subject is an extremely controversial and difficult problem. But we believe that if it is made thoroughly clear to shareholders that selective mining is in their interests profits can be greatly augmented without any further loss of confidence in the boards of directors of Witwatersrand companies.

No doubt it will be argued that the Government would cast greedy eyes on these globular profits and would increase taxation of the rich mines. But we submit that just as shareholders can be educated in the principiles of selective mining, the Government, too, can be made to realise that much of the increased profits earned by taking full advantage of the premium would be available for new mining development.

Enemy Shareholdings.

Regarding enemy-held shares and other property, the Minister of Finance informed Mr. C. W. Malan, in the Assembly on Tuesday, that the Union Government had suggested to the Imperial authorities early in October last that a joint sale of shares in mining companies operating in South Africa, which shares were in the custody and control of the respective Custodians, would be advantageous to both. The advisability and possibility of this joint action had been further discussed during the recent visit of the Union Custodian to London. No decision had yet been arrived at, and the matter was still under consideration. It is impossible to say whether a joint sale would be decided upon or whether each Custodian would dispose of those shares under his jurisdiction.

Swaziland Tin.

The following are the results of the operations of this company for the month of March, 1921: Concentrate recovered, 25 tons; estimated working profit (taking tin at £150 per ton), £71.

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The "Mining Journal's" Essay Competition.

A PRIZE OF £25 OFFERED—REDUCTION OF COSTS AND IMPROVEMENT OF EFFICIENCY—WANTED GOOD IDEAS BRIEFLY EXPRESSED.

It is indisputable that a substantial improvement in the position of Witwatersrand mining is absolutely imperative not only in the interests of the Reef and of Johannesburg, but in the interests of the whole country.

And such an improvement must be founded on a more lasting and stable basis than the mere incidence of the gold premium which, for the present at any rate, is based on the depreciated value of the British pound, a fickle and ephemeral factor which is an unsound basis for any industry. Have you, Mr. Reader, any useful ideas as to how the Industry can be helped? If you have any such views send them along. We are prepared to pay for them.

The enduring improvement which our mines require can only be obtained through the media of better efficiency and lower working costs and with a view to eliciting constructive views on these supremely vital subjects the *South African Mining and Engineering Journal* offers a prize of £25 for the best essay on the subject of "How to Improve Efficiency and Lower Working Costs in and on the Mines of the Witwatersrand."

We are endeavouring to arrange that a committee consisting of Mr. F. G. A. Roberts, Technical Adviser of the Chamber of Mines, Dr. Caldecott, Mr. Hildick Smith, Manager of the Robinson Mine, and the Editor of the *S.A. Mining and Engineering Journal*, will adjudicate the essays submitted.

Criticism should be constructive rather than destructive, but the assurance is given that no competitor will in any way be prejudiced in his employment by the submission of criticism of existing means or methods.

Essays containing libellous or malicious statements against any particular individual or individuals will not be considered.

TERMS OF THE COMPETITION.

The conditions of this competition are as under:

1. Essays must not exceed 2,500 words in length, and where new or suggested devices form an essential portion of the Essay, the contribution should be accompanied by diagrams clearly exhibiting the nature and functions of such device or devices.
2. Essays should be typewritten or written in easily legible handwriting on one side of the paper (preferably of foolscap size) only.
3. Each essay must state the full name and address of the author and if the author is an employee of a Mining Company operating in South Africa or has been an employee of such a company, his occupation and position should be stated.
4. Essays and diagrams (if any) must be addressed to the Editor, the *S.A. Mining and Engineering Journal*, Box 963, Johannesburg, and be marked "Competition" in the top left-hand corner of the containing envelope.

An efficiency team. The men who created a shaft sinking record with Holman drills at the Crown Mines.

5. The competition closes on July 1st, 1921.
6. In the event of the Committee of Adjudication deciding that no essay submitted merits the award of £25, the Committee will have power to withhold the award of such a prize and to give in lieu thereof an amount which they consider proportionate to the value of the best article or articles submitted.
7. It shall be at the option of the Editor of the S.A. *Mining and Engineering Journal* to publish any essay or any portion of any essay submitted and to pay for such essay or portion thereof at the rate of £2 2s per page according to the measure of pages in the S.A. *Mining and Engineering Journal*.
8. No correspondence can be entered into regarding this competition, and the Editor of the S.A. *Mining and Engineering Journal* will not hold himself responsible for the safe return of any manuscript submitted, but where a stamped and addressed envelope is forwarded with each contribution the Editor will, after adjudication, endeavour to return unsuccessful contributions.
9. A competitor may submit more than one contribution.
10. It is an express condition accepted by and binding upon all competitors that the decision of the Committee of Adjudication as constituted above or of any alternative adjudicators is final and absolute. Submission of manuscript will infer a full understanding of the acquiescence of the competition in this and other conditions of the competition.
11. Essays may be written in either of the official languages.

Points for Competitors.

There are one or two matters in connection with this essay competition which we would like to bring to the notice of competitors.

In the first place it should be made clear that a good idea will not be debarred from winning the prize offered because the contribution fails from a literary point of view. Neither will brevity be a handicap. On the contrary we shall welcome briefly expressed ideas and suggestions provided that they contain some useful and new idea or some better application of an idea or device which is not new or novel.

The problem of efficiency on the Rand has been investigated in tremendous detail by Mr. Hildick Smith, Manager of the Robinson G.M. Co. We have recently been privileged to examine the numerous charts, diagrams and curves which have been evolved at the Robinson Mine and which illustrate the value and result of the application of a basic system of applied efficiency which is not a mere nine days' wonder but is an intelligent and successful effort to devise a method whereby industrial flaws can instantly be detected, effective remedies can immediately be prescribed, the relationship of each department to each other department in the matters of economy and efficiency can be determined, and a lasting method of getting the utmost profit out of a ton of rock or out of a whole section can be controlled by the managerial efficiency organisation. We understand that by the adoption of this system a saving of something like £40,000 in stores alone was achieved at the Robinson last year.

We hope in the near future to publish a valuable paper by Mr. Hildick Smith on the evolution and application of this system at the Robinson. It is hardly necessary to say that Mr. Hildick Smith's paper is not being entered for this competition. The average mine employee has not the facilities of a manager for investigating this all important problem. And it is "the average mine employee," the working miner, the shift boss, the amalgamator, the cyanide shiftsman, or the mechanic from whom we wish to draw views and opinions. But contributions will be considered from all and every body irrespective of rank or occupation, nationality or profession.

We account ourselves extremely fortunate in having secured the services of Dr. Caldecott and of Mr. Hildick Smith as adjudicators in this competition, and we shall be pleased indeed if we can add to these the name of Mr. F. G. A. Roberts, Technical Adviser to the Chamber of Mines.

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How to Revive the Mining Industry.

FURTHER VIEWS FROM MR. E. M. WESTON—AN INTERESTING COMMUNICATION—THE GOVERNMENT CRITICISED—A BIG EAST RAND AMALGAMATION SUGGESTED—MR. WESTON WANTS A REEF CONFERENCE.

In our issue of March 12th we published an interesting communication from Mr. E. M. Weston, Consulting Mining Engineer of this town, on a subject of such grave importance to the whole community that we felt certain the views expressed therein would receive general consideration. Mr. Weston is a former Lecturer in Mining at the Transvaal University College and an ex-Rand Mine Manager and School of Mines graduate. The motives which impelled Mr. Weston to express his views are motives which must appeal to every sane thinking man in this country.

The subject dealt with by him was the improvement of the Mining Industry, which provides so much of the economic life blood of the Union.

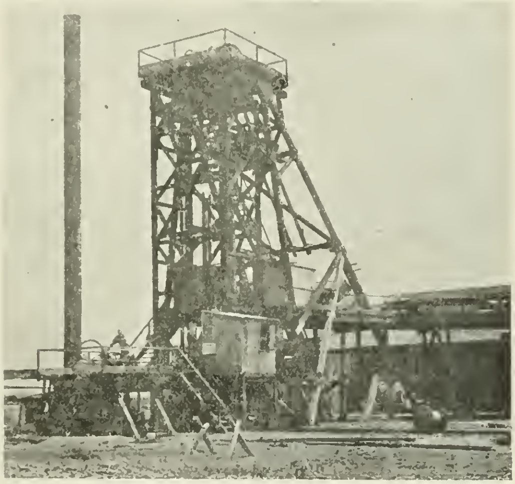
Mr. Weston considered that a Conference, presided over by the Premier, should be held, and he advocated the opening up of new mines on the Far East Rand. The views expressed in our issue of six weeks ago have been much discussed both here and in London, and whilst numerous correspondents have not agreed with Mr. Weston's opinion, it is indisputable that the letter has given a good lead to a community standing on the edge of a bottomless economic pit, but strangely disinclined to take any really useful action.

In the accompanying letter Mr. Weston returns to his subject and asks for a Conference to be called by the Mayors of the Reef towns to consider ways and means for improving the present calamitous state of the Witwatersrand Mining Industry.

Sir,—You will, I hope, pardon me for returning to the subject of my first letter. Since I wrote, weightier voices than my own have emphasized the gravity of the situation; but except for Mr. Andrew Cohen, who is trying to bring about a conference, no one seems to have a programme or to be doing anything except standing helplessly and awaiting the catastrophe. "Mining Engineer" offers some excellent suggestions, but says my letter is too vague and cannot understand how General Smuts can help. The miners, without wise leadership and divided by personal and racial jealousies, seem bent only on trying to hold what they think they have gained, and have nothing better to do than hold a ridiculous strike ballot while unemployment is steadily approaching for forty per cent. of them, unless something is done. Now nothing very helpful can be done without the aid of General Smuts and his Government, because certain mining regulations stand in the way; for instance, it is not legal, even if the native works only six or seven hours, to have a nine hours' bank to bank shift for six days per week.

The Government's Attitude.

Again, the Government must change its whole attitude and assist the mining industry as it assists agriculture, instead of regarding it only as a revenue producer. It can do this in two ways. Without being accused of holding rabid socialistic ideas, I may state that the duty of the Government is to see no mine closes down when arrangements can be made for increasing its supplies of ore. Take the case of the E.R.P.M. A year ago I wrote to this journal pointing out that on the East Rand Proprietary's dip was the Cinderella Deep, idle for want of capital, with developed ore and good prospects, whose workings would be gravely prejudiced if the E.R.P.M. workings filled with water. Further east is the property of the East Rand Extension containing a considerable tonnage of payable ore and fair prospects. Further east again in the Rand Collieries and Van Dyk mines payable ore is developed. These mines need a mill. Surely it is the duty of the Government to make some of this ore available to keep the E.R.P.M. mills at work. There are obstacles in the way of amalgamation evidently. It is the duty of the Government to see they are removed. Again, in the undeveloped areas of the Far East Rand there is a chance to develop, say, five new payable mines. Some of the ground is held by the houses, most by the Government. The houses do not start shaft shaft sinking because times are bad, and because terms are not arranged yet with the Government for additional ground on lease. The Government's duty is to do something and do it quickly. Of course, I shall be told that the Government have no money, and that if they had the agricultural interests in the Government would prevent General Smuts doing anything. I reply, General Smuts prides himself on being a strong man, and it is his business to show the apostles and high priests of the mealie and beef cult just what is going to happen to them if they lose the Rand market and the flood of gold drawn in taxation from the mining industry dries up. I believe also that the Government should and could float a mining loan of, say, three million pounds at 7 per cent. interest with special security on mining royalties and perhaps some "jam" in the case of options on shares in new companies. Of this a loan of £500,000 might make



On the Far East Rand. A Gold Field which Mr. Weston wishes to see further developed in the interests of the whole community.

amalgamations at the E.R.P.M. feasible and five like sums should make it possible to—with or without the co-operation of the mining houses—start up five mines on the Far East Rand. If the Government get only three mines out of the five, in general prosperity and in royalties they will easily recoup themselves for the loan. Confidence would be established and much misery would be averted. Somebody, however, must get up and do something or it will be too late.

A Reef Conference Suggested.

I suggest that the Mayor of Johannesburg and the Mayors of the Reef towns, which are all threatened with destruction, call public meetings at which the position can be plainly put before the people and suitable resolutions carried.

E. M. WESTON.

The Globe and Phoenix Report.

ORE RESERVE AND FINANCIAL POSITION.

The annual report of the Globe and Phoenix Mine makes an early appearance this year. In the following some of the outstanding features of this document are set forth:—

Working costs last year were not appreciably higher, the 69,861 tons being miled at an average mine figure of 53s. 7d., as compared with 53s. 2d. for the 67,308 tons treated in 1919. The following table summarises the profit and loss accounts for two years:—

	1919. £	1920. £
Bullion	372,277	379,881
Gold premium	4,442	153,458*
Misc. rev.	7,855	12,879
Gross profit	199,994	340,043
Income tax	59,813	78,945†
Depreciation, etc.	6,629	10,723
Special development reserve...	—	100,000
Dividends	(1/-) 40,000	(4/-) 160,000
Year's balance	92,652	5,625
Brought in	4,742	97,394
Surplus	97,394	91,769

* Presumably includes £57,452 belonging to 1919.
† Includes Corporation Profits Tax.

It is assumed above that the gold premium for 1920 includes the sum of £57,452, to which reference was made a year ago. The total gold premium, therefore, almost pays the dividend. In the balance-sheet sundry debtors have jumped from £9,067 to £46,191; cash is down from £125,276 to £114,310, and sundry creditors (including taxation) at £99,274, compared with £67,685. From the balance at credit of profit and loss account a dividend of 2s., or 40 per cent., is recommended, leaving £11,768 to be carried forward.

The ore reserves compare thus:—

		Tons.	Oz.	Value. £
Available ore ...				
	1919 ...	62,941	97,475	409,395
	1920 ...	47,380	62,753	263,562
		— 15,561	— 34,722	— 145,833
Ore in pillars ...				
	1919 ...	45,241	78,216	328,507
	1920 ...	46,472	82,568	346,786
		+ 1,231	+ 1,352	+ 18,279

Total reserves have fallen from 108,182 tons to 93,852 tons, and as this does not account for the quantity milled it is fair to assume that, on stoping, the old blocks exceeded the estimate, which evidently was very conservative. The ore in pillars can only be extracted at a later date. Just over 50 per cent., therefore, of the reserves is available, to be increased by excess on stoping and new development. From the latter something may be expected, seeing that Mr. McDonald says that "prospects all over the mine have much improved in the last few months of the year, and that, given a reasonable amount of luck, the position may be regarded with much less anxiety." 56.8 per cent. of values cannot yet be drawn upon. If during the current year the gold premium should remain at about £1 per ounce, the available reserves have a value of £326,000.

Diamond Market Prospects.

The improvement in the condition of the diamond market in the United States is attributed by "The Financier" to the result of the visit to New York of Sir Ernest Oppenheimer, who reassured the trade leaders, and reaffirmed the policy of the London syndicate practically to guarantee the maintenance of diamond prices. It is reported that diamond interests in New York have decided to hold all cut and uncut stones for the market to turn up. Sir Ernest Oppenheimer, in an interview with "The Financier" on his return, dwells on the decisive influence of America in the diamond industry. He says a revival in the diamond trade mainly depends on how quickly business revives there, but he thinks the worst is past and anticipates brisker times in the autumn.

A subscriber would like to hear of some reliable firms interested in kieselguhr. He writes: "I have a very large deposit of this mineral in this country and I am open to do business. I further have a deposit of monazite, molybdenite, and mica, and I would be glad if you could put me on to some firms dealing with those minerals."

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The Mines and the Two Budgets.

INCREASE OF 50% IN DIVIDEND TAXES—DETAILS OF NEW TAXATION—MR. JAGGER'S ACCUMULATED DEFICITS—NEW WORKS POSTPONED.

Below we attempt to summarize the main features of the new taxation with which Mr. Burton proposes to equalize expenditure and revenue in the coming year. Mr. Jagger, the Minister of Railways, is likewise faced with a big deficit. Both Ministers present dismal pictures of the financial state of the country, and have framed their estimates for this year with a view to making every section of the community realize the serious nature of the financial crisis through which South Africa, in common with other countries, is passing.

Since our last issue the Minister of Finance and the Minister of Railways have presented their Budgets, and both in explaining their Estimates have had lugubrious tales to tell. Mr. Burton expects a deficit of £5,909,000 for 1921-22. By a saving of £1,252,000, the cost of living allowance to civil servants, and £678,000, Provincial subsidies, the shortfall will be reduced to £3,979,000. This is to be further reduced to £224,000 by new taxation and by taking £1,333,000 from funds reserved for the reduction of the public debt, derived from bewaarplaatsen, mine leases, etc.

The new taxation will take the following forms: Increased postage on letters to 2d per oz., increased newspaper postage to ½d. for 4 oz. These increases are estimated to bring in £252,000. Increased duty on brokers' notes. The future duty is to be 1d. from £5 to £25, 6d. from £25 to £50, 1s. from £50 to £100, and 1s. on any additional £100. Duplicate scrip will pay a charge (the maximum not to exceed 1s.), and a new duty will be levied on interim policies of oversea assurance companies. An alternative duty of 20 per cent. ad valorem is to be levied on bioscope films. Imported and locally made spirits, beer, and tobacco are all to pay higher duties. The duty on tobacco is to bring in £555,000 and on beer and spirits £328,000. Important changes are made in the Income Tax. Farmers will not get off so lightly as before. They will in future have to pay their tax on a stock basis or trading account basis. The general exemption, which last year was raised to £500, is reduced to £300, but the allowance for children is increased from £30 to £50. All abatements will be lumped together and the total will be reduced in the case of married people by £1 for every £10 by which the taxable income exceeds £600; and as regards single persons by what the taxable income exceeds £300. The super-tax is to be increased. Abatements cease at £5,000 instead of £7,500, and the maximum rate will be increased from 3s. to 5s. This is in addition to the payment of the normal tax. These Income Tax additions are expected to realise £1,082,000. The company dividend tax is increased 50%, i.e., from 1s. to 1s. 6d. in the pound.

THE RAILWAY BUDGET.

Only just less important than Mr. Burton's is Mr. Jagger's contribution to the finances of the country. The railways and harbours in Mr. Jagger's care represent an asset valued at nearly £110,000,000, and the revenue of the railways is always a faithful index and reflection of the financial condition of the Union. Mr. Jagger was in his most pessimistic mood when he delivered his Budget speech on Monday. He has to report the piling of deficit on deficit, and he paints a dismal picture of S.A.R. finance "outrunning the constable." For the past few years there have been substantial deficits, and Mr. Jagger anticipates a further deficit of £605,880 for 1921-22, making a total deficit of £3,144,710 on March 31, 1922. This, moreover, is based on the cost of living allowance to the railway employes being done away with. Everyone will agree with Mr. Jagger that the railway rates cannot further be increased—they are already at breaking point—and the only course open to him is ruthless economy. New lines and extensions will have to be shelved, and every work, short of actual maintenance, will have to be held up. These steps, Mr. Jagger declared, had been decided upon. He did not say whether the electrification of the Durban and Capetown local sections of the railway was included in the operations to be postponed. We sincerely hope not. The war allowances, as already stated, are to cease, and the only alternative is to retrench men and create further unemployment. We can only hope, against hope, that the measures taken by Mr. Burton and Mr. Jagger will prove effective in meeting the unexampled, critical position created by their own and their predecessors' incorrigible optimism.

Certificates issued by the Mines Department for the period ending 16th April, 1921: Mine Overseers (Metalliferous Mines): D. J. Louw, W. Old, R. Pill, B. J. Pretorius, T. Q. Ryan; (Collieries) J. Connolly; ("Non-fiery Collieries) J. L. Simon. Mine Surveyors: J. H. Gibbons, W. W. B. McNeil, J. L. White. Mechanical Engineers (Mines): D. MacCubbin.

GOVERNMENT EXAMINATIONS
Up-to-date Tuition.

MANAGER'S CERTIFICATE (METALLIFEROUS). We secured 15 Passes from 19 Entries in two recent examinations, and in the last (Jan. 1921) examination secured 7 passes from 8 entries. Another percentage record !

MANAGER'S CERTIFICATE (COAL).—New Class recently started. Candidates being enrolled.

MINE SURVEYORS' CERTIFICATES.—We have secured 55 Certificates to date, and lead with passes by more than 10 to 1.

OVERSEER'S CERTIFICATE.—We lead with passes, 1918 and 1919. 21 Certificates secured during 1920 Overseers' Class (Coal) recently started.

PRELIMINARY SURVEY.—We have trained the majority of the Assistant Surveyors working in the Mines.

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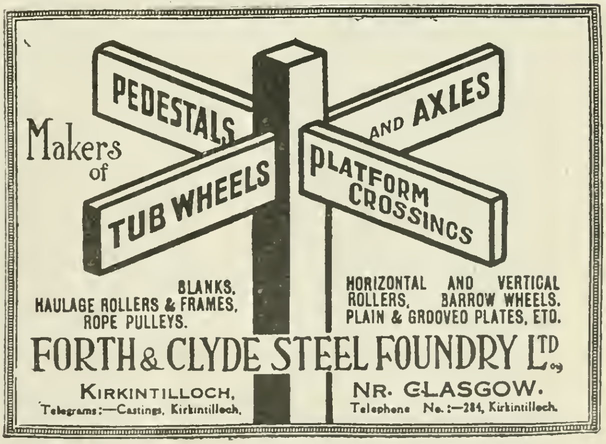

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The "Premium" and Higher Working Costs at the Robinson Deep.

INCREASED COSTS DUE TO HIGHER WAGES AND PRICE OF STORES—GOLD "PREMIUM" SAVES SITUATION—NEW SUB-VERTICAL SHAFT TO COST A QUARTER OF A MILLION.

The annual meeting of the Robinson Deep will be held next Friday, and a copy of the annual report for 1920, to be laid before the meeting, has reached us. What the gold "premium" has meant to the company is shown by the statement in the directors' report that the working profit for the year which includes £269,943 estimated to be received in respect of premium, amounted to £188,652. The net profit for the year was £159,198, which, with the balance of £111,552 brought forward, made up a total of £284,051. Dividends on the "A" shares absorbed £127,471, leaving a balance of £156,579 to be carried forward. From the superintending engineer's report we take the following table, showing the results during the last five and a half years:

Year.	Tons Milled.	Yield per Ton. Dwts.	Yield per Ton. Value.	Costs per ton.	Profit per ton.	Total Profit on Working.
18 months to 31 12 16	965,400	6·879	28 7·957	19 7·392	9 0·565	£436,705
1917	561,100	6·588	27 6·296	22 5·295	5 1·001	142,691
1918	529,300	6·462	26 11·764	25 8·245	1 3·519	31,225
1919	580,500	6·608	31 1·996	25 10·920	5 3·076	152,567*
1920	624,600	6·291	35 2·937	29 2·448	6 0·489	188,652*

* Includes premium on gold.

The superintending engineer, Mr. G. A. Chalkley, sums up the position of the mine in the following passages of his report:

"The development footage accomplished during the year amounted to 15,839 feet, being an increase of 7,303 above that of the previous year. The footage sampled was 8,815 feet, of which 8,234 feet, or 93·4 per cent., was in payable reef, indicating an average value of 18·6 dwts. over an average reef width of 23·9 inches, equal to 444·5 inch-dwts. The ore reserve fully developed at 31st December, 1920, is estimated at 1,597,000 tons, of an average value of 6·97 dwts. per ton, over a stoping width of 65 inches, equal to 453 inch-dwts. and 195,000 tons of partially developed ore of an indicated value of 7·11 dwts. over a stoping width of 72 inches, equal to 512 inch-dwts. The average number of natives at work was 3,615, as compared with the figure of 3,342 for the year 1919, or an increase of 273 natives.

Wages and Working Costs.

"As compared with the previous year, in spite of an increase in tonnage from 580,500 in 1919 to 624,600 in 1920, it will be noted that the working costs are higher by 3s. 3d. per ton. This to some extent is accounted for by the greater amount of development work undertaken, and by the large increase in white wages which affects every item of working costs. This increase in white wages is the result of the concessions made in February, 1920, and which became operative as from the 1st November, 1919. In this connection it is interesting to note that the pay to white workers on your mine during the year 1920 averaged out at £510 per head. In February of last year also certain advances were made in native pay. As an offset to this rise in costs, a premium on gold has been realised to the value of approximately £277,139, if the normal price of gold is taken at £4 3s. 10d. per fine ounce.

Cost of Stores.

"The cost of stores still remains high, the increase in working costs due to this source being approximately 3s. 6d. per ton milled, as compared with the first years of the War. These high prices of stores would appear to be on the decline, and we can thus hope for a decrease in the cost of living and hence a lower wages bill.

The Future of the Mine.

"In order to exploit the deeper ground lying to the south of the 'Chris' shaft, it is proposed to sink a sub-vertical shaft, an undertaking which will entail the expenditure of over a quarter of a million pounds sterling. It is, of course, easily understood that mining at such a depth, when every ton of rock has to be hoisted a distance of not less than 1,000 feet, is naturally more expensive than in the upper levels of the mine. The cost of hoisting, as stated, is greatly increased, the support of workings is more expensive and becomes a difficult mining problem. The cost of ventilation is higher, and the same applies to other items. These increases are inseparable from deep level mining, and it is essential that a reduction in the present working costs should be obtained if the ore at these depths is to be mined at a profit. The two main factors in such a reduction in working costs will be a lower price of stores and a smaller wages bill accompanied by greater efficiency."

In these few pregnant sentences Mr. Chalkley puts the whole present position of the Rand in a nutshell. What is true of the Robinson Deep is unfortunately true of most of our mines.

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The Year with Barnato Mines.

POINTS FROM PRO. LAWN'S REPORTS—STATE MINES MAKE RECORD PROFITS—ENCOURAGING RESULTS FROM VAN RYN DEEP WESTERN SECTION—CONSOLIDATED LANGLAAGTE AND "KNIGHTS" DEVELOPMENT DISAPPOINTING IN DEPTH—QUESTION OF REDUCTION PLANT FOR NEW STATES.

In the following extracts from the annual reports of the Consulting Engineer are reflected the position and prospects of the mines of the "J. C. I.," or Barnato Group. Interest centres mainly in the record profits obtained at the State Mines and in the encouraging results in the Western Section of the Van Ryn Deep. The latter, Prof. Lawn characterizes as the "most important feature of the year's work at your mine." A pointing result of development in the bottom levels pointing result of development on the bottom levels at the Consolidated Langlaagte and "Knights."

State Mines.

In his report for 1920, Prof. Lawn writes: The tonnage milled for the year amounted to 1,515,000 tons, which is an increase of 154,000 tons, and the number of fine ounces of gold recovered was 603,239·655, an increase of 33,857·297 fine ounces when compared with the previous year. The grade at 7.963 dwts. was slightly lower than for 1919, when it amounted to 8.367 dwts. The working costs amounted to 22·183s. per ton, as compared with 21·025s. in the previous year. The increase was principally due to increases in wages, and would have been more marked had it not been for the increase in the tonnage dealt with. On the whole, the working costs for the year under review must be looked upon as highly satisfactory under the conditions prevailing on the Rand. The miners' phthisis contributions for the year amounted to £27,693, as compared with £9,419 for the year 1919. The working profit for the year 1919 amounted to £1,246,875, while last year it totalled the record figure of £1,708,164. The increase in the working profit for the year was due chiefly to the premium received on gold. The price of gold rose to the high point of £6 7s. 6d. per fine ounce in February, but fell in April to £5 2s. 7d., after which the price improved until in November, when it was once more over £6. The exact price of gold obtained for the year has not yet been ascertained, but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce.

Ventilation and Development.

The ventilation of the mine has been a matter of very careful consideration during the year. Hitherto only one shaft—the north-east—has been an upcast, but arrangements are now also complete to also make the south-east shaft an upcast. It is expected that this will effect a marked improvement, but as the area of the workings grows larger it will probably be necessary to sink a new shaft for ventilating purposes only. The development work accomplished during the year has shown excellent results. Of the total footage on reef sempled, 13,100 feet (or 66·1 per cent.) was payable, and averaged 11·6 dwts. over 55 inches, as compared with 17,140 feet (or 64·7 per cent. averaging 17·4 dwts., over 50 inches in 1919.

Ore Reserves.

The ore reserves have been recalculated, and are estimated at 10,291,000 tons of an average of 8·2 dwts, over a stoping width of 77 inches; all ore of a value of 4 dwts. and over has been included. The decrease in the tonnage of ore reserves is due to the exclusion of certain blocks which were included last year, but which are only partially developed. The reduced value of 8·2 dwts. as compared with 8·6 dwts corresponds with the stoping values for the past year, there being a difference of ·4 dwt. between the estimated and actual values. The diagram which accompanies the report shows that the ore reserves are widely distributed throughout the mine.

Van Ryn Deep.

In his repwort on the Van Ryn Deep, Prof. Lawn writes: The quantity of ore crushed during the year amounted to 583,550 tons, which is an increase of 13,150 tons on the tonnage milled for 1919. The number of fine ounces recovered at a cost of 48s. 11d. per fine ounce amounted to 305,825 as compared with 297,233 fine ounces at a cost of 41s. 3d. per fine ounce in 1919. The exact price of gold obtained for the year has not yet been ascertained, but the average price as worked out from weekly returns was £5 12s. 7d. per fine ounce. The working costs at 25s. 8d per ton are 4s. 2d. per ton higher than the previous year, the increase being due principally to increases in wages; but the miners' phthisis contributions, which amounted to £31,097, as compared with £11,718 in 1919, account for 8d. per ton, while the increased cost of gold realisation and bank exchange is equivalent to 1s. 3d. per ton. A record working profit for the mine was made during the year, and amounted to £964,883, which was £177,475 higher than the profit for 1919. The ore reserves, which have been recalculated, are slightly higher than they were at the end of 1919, and are estimated at 3,260,000 tons of an average value of 9·7 dwts. over a stoping width of 72 inches. These reserves include all developed ore of a value of 4 dwts. and over, and are shown on the accompanying diagram. During the year development was pushed in the Western Section of the mine, which had been somewhat neglected because the prospects were looked upon as unpromising. The results obtained are quite encouraging, for although the value of the ore exposed is not high, still it is payable, and the reef widths are considerable. It is, therefore, expected that a considerable tonnage of ore will ultimately be won from this section. I look upon this as the most important feature of the year's work at your mine.

New State Areas.

Prof. Lawn writes:—Excellent progress was made in sinking the two shafts during the year, the average sinking up to the time of striking the reef was 218 feet per month in the North Shaft and 233 feet in the South Shaft. In the South Shaft the record speed was made for a month's sinking in a rectangular shaft; in March 270 feet were sunk in 31 sinking days, and in the following month 267 feet were sunk in 29 sinking days. It will be seen from the Manager's Report that the reef was intersected in both shafts during the year under review. In the South Shaft the reef showed an excellent value, but in the North Shaft it was faulted and disturbed and was of low grade. It could scarcely be expected that good values would be struck in both shafts as the good ground in the Far Eastern Mines is known to lie in patches, but the excellent values struck in the southern part of the Geduld Proprietary Mines is an encouraging feature in connection with your property. In the South Shaft there will be two stations, one at the level of the reef and the other 200 feet below it. In the North Shaft there will only be one station. Since the end of the year the sinking of both shafts has been completed. The stations, ore bins, etc., are being cut, and development work has already commenced. The policy with regard to the reduction plant is receiving very careful consideration. It is evident that the sooner the reduction plant can be got to work the less will in the capital expenditure involved in bringing the property to a productive stage. On the other hand, it would not do to have the reduction plant ready before sufficient development had been done to supply it with ore, and further, we are now in a period of falling prices which might have a considerable effect on the cost of the reduction plant. All these factors are being carefully watched, and every endeavour will be made to bring the mine to a producing stage at the earliest date consistent with the best interests of the shareholders.

Consolidated Langlaagte Mines.

Prof. Lawn writes:—The quantity of ore crushed during the year amounted to 503,900 tons, which was 3,900 tons less than the previous year. The working costs at 24s. 8d. per ton were 4s. 2d. per ton higher than in 1919, the increase being principally due to the increased cost of labour, but the miners' phthisis contributions, which amounted to £19,112, as compared with £7,712 in the previous year, account for 6d. per ton; while the gold realisation and bank exchange account for 9d. per ton. The number of ounces of fine gold produced during the year amounted to 144,569, which were produced at a cost of 85s. 11d. per fine ounce, as compared with 149,497 fine ounces at a cost of 69s. 6d. in 1919. The exact price of gold obtained for the year has not yet been ascertained ,but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce. The working profit for the year, which includes £405 from the treatment of accumulated slime, amounted to £185,109, which only differed by £47 from the profit of the previous year. This was due to the fact that the increased working costs were compensated for by the increased gold premium. Sinking at the East Shaft was restarted in May, and 354 feet were sunk; while at the West Shaft sinking was carried on during the year, and 149 feet were sunk in this shaft. The amount of development done during the year was 11,125 feet, and of the footage sampled, viz., 8,678 feet, 29·19 per cent. was payable. The results obtained in the bottom of the mine were very discouraging. The ore reserves which have been recalculated, are now estimated at 1,339,000 tons of an average value of 6·2 dwts. over a stoping width of 51 inches; they include ore of a value of 5 dwts. and over. The average value is practically the same as last year and the reduced tonnage is partly due to depletion of reserves during 1920, which could not be replaced, and partly to the fact that the Main Reef Leader stopes proved more patchy than had been anticipated, so that certain unpayable ore had to be cut out, and the remainder of the reserves on the Main Reef Leader were reduced by one-third as a precautionary measure.

Langlaagte Estate.

Professor Lawn writes: The tonnage milled during the year amounted to 465,300 tons, which was 10,180 tons less than for the previous year. There was an increase in working costs of 5s. 6d. per ton milled, due principally to the increased cost of labour, but an examination of the working expenditure for the year will show that the amount of the miners' phthisis contributions is nearly three times greater than for 1919, while the cost of gold realisation and the bank exchange contributed very largely to the increase in the working costs. During the year under review 138,773 fine ounces of gold were produced at a cost of 89s. 5d. per fine ounce, and realised the sum of £774,032, as compared with the previous year, when 139,082 fine ounces were produced at a cost of 72s. 4d. per fine ounce, which realised the sum of £650,369. The exact price of gold obtained for the year has not yet been ascertained, but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce. The working profit for the year amounted to £153,353, which was £6,364 higher than for the year 1919, and this was due solely to the premium on gold. Shaft-sinking was pushed forward throughout the year, and the footage sunk in the Hebbard shaft, which has now reached a depth of 3,418 feet, was 278 feet; while 574 feet was sunk in the main shaft, which has reached a total depth of 3,276 feet. It will be seen that these footages are a considerable improvement on last year, when only 157 feet were sunk in the Hebbard shaft and 282 in the main shaft. The development results continue to be satisfactory, and the ore reserves, which have been re-calculated, are estimated at 1,016,800 tons of an average value of 6·4 dwts. over a stoping width of 55 inches; they include ore of a value of 5 dwts. and over.

"Knights."

Professor Lawn writes: The quantity of ore crushed during the year amounted to 416,200 tons, which was an increase of 19,250 tons on the tonnage milled for 1919. The value of the ore recovered, viz., 5·604 dwts. per ton, was substantially the same as for the previous year. The number of fine ounces produced at a cost of 88s. 7d. per fine ounce amounted to 116,627, which was 6,929 fine ounces more than in 1919, when 109,698 fine ounces were produced at a cost of 77s. 11d. per fine ounce. The exact price of gold obtained for the year has not yet been ascertained, but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce. There was an increase in the working costs of 3s. 3d. per ton, due principally to the increased cost of labour, but the miners' phthisis contributions, which amounted to £12,029, account for 4d. per ton, while the gold realisation charges and the bank exchange account for 9d. per ton. The profit for the year, which amounted to £133,757, was £44,381 more than for 1919, and was due to the increased price of gold and to the higher tonnage milled. Towards the end of the year 47 claims of the Knights Deep ground were taken over to be worked by the company. Most of the claims have been partially worked but it is hoped to obtain from them a substantial tonnage which will help to keep your battery more fully employed than it would otherwise be. The sinking of the southern incline shaft has been stopped at a depth of 3,353 feet because the prospects in the bottom of the mine are not encouraging. The ore reserves have been recalculated, and are estimated at 774,500 tons of an average value of 6·0 dwts. over a stoping width of 63 inches; they include all ore of a value of 5 dwts. and over.

New Unified.

Professor Lawn writes: The quantity of ore crushed during the year amounted to 128,500 tons, which was 12,900 tons less than for the preceding year. The working costs at 22s. 1d. per ton were 5s. per ton higher, chiefly because of increased wages. Owing, however, to the increased price obtained from the sale of gold the working profit amounted to £41,037 as compared with £36,338 for the year ended 31st December, 1919. The number of fine ounces produced during the year amounted to 32,681 at a cost of 86s. 9d. per fine ounce as compared with 33,293 fine ounces at a cost of 72s. 4d. per fine ounce for the previous year. The exact price of gold obtained has not yet been ascertained, but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce. The ore reserves have been re-calculated and are estimated at 83,000

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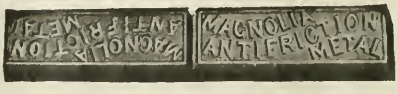

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tons of an average value of 6·2 dwts. over a stoping width of 46 inches. This tonnage includes developed ore of a value of 4·25 dwts. and over. There is still a certain amount of reclamation work to be done; but the continued working of the mine depends on so many uncertain factors that it is difficult to say how much longer it can be kept running without loss.

New Primrose.

Professor Lawn writes: The quantity of ore crushed during the year was 232,100 tons, being an increase of 21,200 tons as compared with the year 1919. The value of the gold recovered showed a decrease of ·491 dwt. and the number of fine ounces, produced at a cost of 99s. 7d. per fine ounce, amounted to 47,484, a decrease of 843 fine ounces on the amount produced in the previous year, when 48,327 fine ounces were produced at a cost of 77s. 3d. per fine ounce. The exact price of gold obtained for the year has not yet been ascertained, but the average price as worked out from the weekly returns was £5 12s. 7d. per fine ounce. The working costs at 20s. 4d. per ton were 2s. 8d. per ton higher than for the previous year, the increase being chiefly due to higher wages, but the miners' phthisis contributions amounted to £5,367 as compared with £1,862 for 1919, and account for 3d. per ton, while the increased cost of gold realisation and bank exchange account for 5d. per ton. The working profit for the year which amounted to £31,715 was £9,664 less than the profit for 1919, the decrease being due to lower yield and the increase in the working costs. During the year the mynpachts of the Glencairn Main Reef Gold Mining Company, Ltd., were purchased, and it was arranged that the Knights Deep should clean out the eastern end of the Glencairn mine and this company the western end. Unfortunately the fire at the Knights Deep mill prevented that company from carrying out its undertaking, but the New Primrose Company re-equipped the old western shaft of the Glencairn Company and is now reclaiming ore from that section. It will be seen that the actual ore reserves of the mine are very small, and would not sustain its existence for more than a month, but gleaning is being carried on over a wide range of old workings, not only in the old Primrose mine but in the May Consolidated, and also now in the western part of the Glencairn. Under favourable conditions it may be possible to keep the mine running for another year or two, but, of course, adverse conditions could not be sustained for long. The ore reserves have been recalculated, and are now estimated at 26,500 tons of an average value of 7·6 dwts. over a stoping width of 54 inches.

Value of the Conference.

I therefore commend to you the careful consideration of the possible value of applying as many as possible of the known, even though admittedly imperfect, safeguards, and not to wait discouraged because the perfect panacea is not to hand. This conference is eminently fitted to consider our present problem. I venture to say that nowhere on earth is there a body of men more fitted for this task. I look very hopefully to the fruits of our deliberations, and I sincerely beg you—all of you—to take part in the discussions and to get your friends to come to these meetings and participate in the conference. This symposium, I hope, will take many meetings—we must not hurry over it—and we must hear everyone who has anything to tell us. Every ray of light thrown upon this problem is very precious. No matter how slender and hesitating your beam, do not fail to throw it on our minds. We want it so very badly, for the sake of the pitiable human wrecks we may prevent.

One of the oldest mines of the Barnato Group, the Knights, or the Witwatersrand G.M., where prospects in the lowest levels are not encouraging.

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Telephone **913**. P.O. Boxes **963** and **4573**.
Cable and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout Soutb Africa, and at the London Agency as above.

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EDITORIAL.

THE UNEMPLOYMENT COMMISSION.

> **"It might be said that the unemployment which has arisen during the last year is largely due to the failure of the country to make the fullest use of its great gold asset."—From the majority report of the Unemployment Commission.**

In an interim report which has just been issued the Unemployment Commission makes sundry recommendations amongst which are the following:

(a) The recommendations contained in the interim report of the Low Grade Mines Commission of 1919 be given effect to as speedily as possible.

(b) That all available proclaimed mining areas on the Witwatersrand, suitable for irrigation and cultivation, be deproclaimed and set free for use as small holdings and allotments as far as possible.

(c) That the local industries of the country be fostered, and that a permanent board be appointed to deal with the adjustment of tariffs and other forms of State aid, with due regard to the interests of the community.

(d) That pending the appointment of a permanent board, in the event of other local industries being threatened with extinction, the Government act as in the case of the boot and shoe industry by appointing a special committee to investigate and report promptly on the position.

(e) That special relief be afforded to the boot and shoe industry by the imposition of an increased duty on imported boots and shoes.

The report reviews the critical conditions of the low grade gold mines and reiterates the warning given by Sir Evelyn Wallers at last year's annual meeting of the Chamber of Mines as to the disastrous effect a decline in the price of gold will have on the Rand. The report refers to the report of the Low Grade Mines Commission the recommendations of which seem to have been forgotten by the Government

Those which appear to the Commission to be of chief importance are:—

(a) Greater co-operation between the management and the employees to be assured by works committees and joint committees.

(b) The rearrangement of underground work so as to increase the effective working period of natives.

(c) The temporary employment of natives from north of latitude 22 deg. south to supplement the present insufficient supply of native labour.

"The sudden rise of the gold premium appears to have lulled both sides, more particularly the employees' organisations, into a sense of security which has militated against the full and speedy application of recommendation (a)" remark the Commissioners.

The following highly important paragraph appears in the report:—

"It might be said that the unemployment which has arisen during the last year is largely due to the failure of the country to make the fullest use of its great gold asset."

We are strongly in agreement with this view, although our interpretation of this remark may not coincide with the ideas which induced the Commissioners to arrive at this conclusion. The country most certainly has not made the fullest use of its great gold asset. The Government has done nothing whatsoever to encourage gold mining. And we hold too that the great mines of the Far East Witwatersrand are to blame for not making the fullest use of their huge ore reserves and particularly so at the time when gold stood around £6 per oz.

In our view the Modder, the Van Ryn Deep, Brakpan, Springs, the City Deep and the Crown Mines and in fact all the richer mines of these fields could have enormously increased their profits by the adoption of a policy of selective mining.

We contend that the policy pursued at these properties should have been the mining of the highest grades of ore in these properties, in fact in all mines of the Rand and that this resultant gold should have been sold for the highest price obtainable. By this means a vast increase in profits would have been secured and large sums of money would have been made available for the opening up of new mining areas on the Far East Rand or elsewhere.

We contend that the mines should adopt selective mining to-day and that if gold again advances in price the mines should intensify the selection policy so that the richest stopes they possess are worked when the selling price of the produce is at its highest. Elsewhere in this issue we deal with this important subject at considerable length, but we would here reiterate the view that the gold mines are not taking advantage of the gold premium which will not last for ever and that millions of pounds have been and are being sacrificed to the fetish of regularity of output which is simply a false god worshipped by Boards of Directors fearful of criticism.

There is one other point in the Unemployment Commissioners' report which we should like to refer to and that is the great stress that is laid by the Commissioners on the importance of the boot and shoe industry

We are quite prepared to admit that the manufacturers of boots and shoes at the coast gives employment to a large number of workers. But after all what is this boot and shoe industry by comparison with the great gold mining industry of the Witwatersrand? It is of infinitely more importance to the whole country that "special relief" should be afforded to our struggling mines than that boots and shoes made in South Africa should be protected by an increased duty on imported articles.

We know that Johannesburg and the other Reef towns are regarded by coast and backveld as dominions of Beelzebub and haunts of Satan. But it is the Rand that pays the country's bills and provides the great bulk of South Africa's revenue. Were it not for the gold mines comparatively few people in the Union would have sufficient money to buy boots and shoes. The first essential of the present position is the finding of some remedy which will revivify the waning mining industry. We suggest such a method in this article. And it is only by expanding the gold mining industry that we shall solve the unemployment problem.

NEW TAXATION AND THE MINING INDUSTRY.

What with the new Provincial taxation proposals, the new Union taxation announced by Mr. Burton, and the utter absence of relief in Mr. Jagger's dismal picture of railway finance, there is no fear that the Transvaal taxpayer at any rate, of whatevr class of the community he be, can forget the financial plight of the country. In another part of this issue we attempt to set out briefly the salient features of the new programme of taxation framed by Mr. Burton. Mr. Jagger's negative methods of finance are also outlined, and here it only remains to record our impressions on emerging from a study of these marshalled cohorts of figures and statistics. Naturally, our first question is, what of the Rand mining industry *vis-à-vis* the new taxation. Mr. Burton frankly pays tribute, but merely verbal tribute, to the place of the Rand in the economy of the country. Mr. Jagger denies us even the appearance of taking the industry into consideration. Both fail in their figures and their estimates to recognise the critical pass to which the Rand has come, and both explore almost every avenue of economic conjecture and contingency except the most important of them all—the life of the mines of the Rand! The chief industry of the Union, we all know, is not directly represented in the Union Parliament, and it may be that the debate on the two budgets, Union and Railways, may run its course, with never a word to bring Ministers and Parliament back from the clouds to the realisation of the fundamental basis of our economic life. That is what happened last year, and the year before. It may happen again, and Government may go on living in a fool's paradise unless Parliament is rudely awakened to the reality. We note that the President of the Chamber of Mines is in Capetown, and that Mr. Burton airily credits him with a polite admonition regarding the danger of more mines closing down. Mr. Burton, we venture to say, will learn to take Mr. Buckle more seriously before the end of the chapter. It is not enough for the Minister to do lip service to the all-importance of the Rand in the sphere of Union public finance. Some constructive proposals are sought from him to foster and support the industry in the day of its trial. It is not enough that no new imposts are placed on mining, or that the Government is satisfied with a fifty per cent. increase in the tax on dividends. Neither Mr. Burton nor Mr. Jagger shows himself capable of appreciating the delicacy of the position or of taking thought for the financial catastrophe that would be entailed by the passing of the gold premium during the current twelve months. That, of course, is the cardinal fact of the situation: and it is to be hoped that before the debate on the two interwoven budgets is allowed to peter out those members who are supposed to represent the Rand and who follow, from a distance, its chequered fortunes, will not allow the Government to forget it sobligations to the industry that carries the country on its back. For the Government's obligations and opportunities in respect to the mining industry we need go no further back than the report of the Unemployed Commission, which puts in plain, unmistakable terms the facts of the situation, and which is summarized in equally plain and unmistakable terms in this issue.

Notes & News.

RECENT MINING MACHINERY DEALS.

There are strange rumours afloat as to the recent disposals of plant by certain Witwatersrand mines which have for one cause or another ceased operations and have sold their equipments. We have for some time past observed that tenders for the purchase of equipment of those companies are not very extensively advertised, neither are their effects usually sold by public auction.

It will be advisable for the directors of some of these companies to make a full statement as to what tenders were submitted, and if no tenders were called for, why it was not considered to be in the shareholders' interest to call for quotations or to sell to the highest bidder at a public auction. If shareholders are not enlightened on these important points, it is pretty certain that some pertinent questions will be asked and full answers will be demanded.

* * * *

The Union Ccrporation and the San Francisco Mines of Mexico.

It is proposed to convert the capital of this company (now £800,000 in £1 shares) into 10s. shares. The debenture holders are to be asked to sanction further postponement of payment of interest until April 1, 1924, and the redemption of the principal until the following year. In return for these concessions the interest is to be raised from 6 to 8 per cent., and the debenture holders' conversion rights will be continued until March, 1925, on 400,000 shares at par instead of 200,000 shares of £1 each at par. These arrangements free the company from payment of debenture interest until April, 1924, leaving current profits available for distribution subject to the payment of debenture interest being resumed. The £100,000 advanced by the Union Corporation will be available for the equipment and development of the mine. The capital will be written down to £175,000, and replaced by the aforesaid 350,000 10s. shares, and the 450,000 unissued shares of £1 will be divided into 10s. shares. The report of the directors shows a profit for the year ended December 30 last of over £33,000. It is proposed to erect a plant with a capacity of 250 tons daily, and the consulting engineers express the view that the grade of the ore and the treatment adopted will practically render the company independent of market conditions.

* * * *

"The Burden of the Years."

What Swinburne—the poet, not our energetic Chief Inspector of Mines!—would call the burden of the years as applied to a mine is reflected in the annual report of the Manager of the New Primrose. Mr. H. L. Krause writes, in the course of that report, "All machinery was maintained in working condition. The cost of surface maintenance is to-day of considerable moment. The age of the plant, shifting ground due to mine subsidence, the high cost of material and the extended size of the property keep this charge at a figure much beyond that of former years. The main coal bunker trestling supporting the railroad was completely renewed; fifty stamps were reconditioned in the battery; a new headgear and ore bin was built at the Glencairn Shaft, and a mechanical haulage track run to the May Central Shaft to connect with the existing rock haulage; a second track was laid from the May Central bins to the May Deep to accelerate speed of transportation of the ore from the May and Glencairn Shafts, and the Moss Rose hauling engine was removed and installed at the Glencairn Shaft. This hoist is operated by compressed air purchased from the Rand Mines Power Supply Co., and some 4,000 feet of 4 inch air column was laid to effect this measure." Put briefly, and in another way all this means that the "New" Primrose is growing, like the rest of us, old.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

S.A. Land and Exploration Co., Ltd.—Eighteenth ordinary general; 38 Meischke's Buildings; May 18, 12 noon.

Knight Central.—Corner House; May 20.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Union Corporation, Ltd.—Ordinary general meeting; 94 Main Street; June 3, 11 a.m.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Mining.

The Piz Piz Gold District, Nicaragua.—Mining and Scientific Press, March 12, p. 358.

Valuing Partly Exhausted Mines.—Mining and Scientific Press, March 19, p. 385.

Causes of Subsidence.—Iron and Coal Trades Review, March 25, p. 133.

Coal.

Froth Flotation as Applied to the Washing of Industrial Coal.—Colliery Guardian, March 24, p. 867.

Wages Formulæ.—Colliery Guardian, March 24, p. 877.

Causes of Spontaneous Combustion in Coal and Method of Treatment of Underground Fires.—Iron and Coal Trades Review, March 25, p. 125.

Engineering.

The Long Distance Telephone System of the United Kingdom.—The Engineer, March 25, p. 319.

Miscellaneous.

Industrial Research.—Mining and Scientific Press, March 12, p. 349.

Mining Education.—Iron and Coal Trades Review, March 25, p. 430.

Iron and Steel.

Outlook for Lower Coal Price Seems Remote.—Coal Trade Journal, New York, March 16, p. 293.

Latest London Quotations.

LONDON, 4.5 p.m., Wednesday, 20th April, 1921.—Buyers: Modders, 63s. 3d.; Modder B's, 26s. 3d.; Modder Diaps, 45s.; De Beers Deferred, £11 17s. 6d.; Springs Mines, 33s. 9d.; Springs West, 12s. 9d.; New Kleinfonteins, 5s. 6d.; Van Ryn Deeps, 75s.; Randfontein Estates, 15s. 1½d.; Randfontein Centrals, 10s. 6d.; New State Areas, 20s. 3d.; Rand Mines, 45s.; Crown Mines, 40s. 9d.; City Deeps, 42s.; Gedulds, 47s. 6d.; Chartereds, 12s. 10½d.

The Randfontein "Cause Celebre."

We have purposely refrained from commenting on the *cause celebre* between Randfontein Estates and Sir Joseph Robinson while the case was *sub judice*. An admirable summary of the whole business, however, is contained in the annual report of the Randfontein Estates, which merits putting on record for more than one reason. The facts are thus simply stated: "In March, 1920, the Supreme Court at Pretoria heard the action instituted by this Company against Sir Joseph Robinson, Bt. The Company's claim was for a sum of about £467,000, plus interest at six per cent. per annum from certain dates in 1906 and 1909, when certain claims and other ground were sold to this Company at a profit amounting to the sum stated, which profit the Company claimed should not have been made by Sir Joseph Robinson. On portion of the claim, the Company succeeded, but judgment was given against it in respect of £252,000. The defendant appealed against the judgment given in favour of the Company, and the Company cross-appealed in respect of the deal of £252,000. The appeal was heard at Bloemfontein on 13th December last, and judgment was given at Cape Town on 19th February in favour of the Company on the appeal made by Sir Joseph Robinson, and the Company also succeeded in getting judgment in its favour on portion of the cross-appeal. The Appellate Court ordered that payment of practically all the costs of the proceedings be made by Sir Joseph Robinson. The matter of the recovery of the amount which will now have to be paid to the Company is having the attention of the Directors."

PENROL.

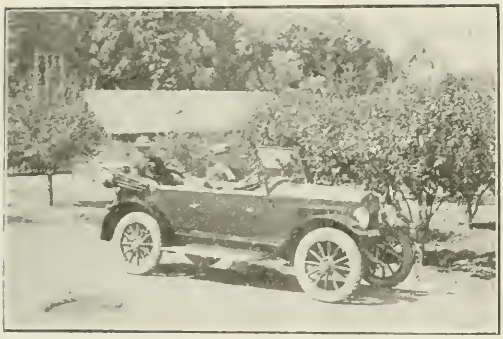
A PROMISING NEW INDUSTRY.

CONVINCING REPORTS—A VERY STRONG BOARD OF DIRECTORS.

"PENROL" AS A SUBSTITUTE FOR PETROL—PRODUCING OUR OWN MOTOR FUEL.

Participation in the South African rights for the making of Penrol, the new substitute for petrol, is being offered to the public this week by the issue of 85,000 shares at par in a new company called Penrol (S.A.), Ltd. The issue is favourably commented upon in the following article.

The discovery of a substitute for petrol, which can be made in this country from local products, is an event of great industrial significance. Most of the facts regarding Penrol, the new fuel, have already appeared in our columns, but immediate interest is lent to the invention by the public offer of shares this week in a company which is to deal with the South African rights. The prospectus of the new issue appears in another part of this issue, and is commended to the careful attention of investors. The main consideration, from the industrial point of view, is that the new fuel (of which the chief constituent is alcohol) is capable of being made entirely in this country from maize or mealies, our staple product, and that it thus gives promise of creating a new and legitimate local industry of substantial proportions.



Mr. R. D. Robbins-Brown in his Essex Car propelled by Penrol, with which he made an extensive and satisfactory test tour through the Cape Colony.

From the user's point of view it is claimed for the new fuel that it does not foul the plugs, nor corrode the engine. Its price is half that of petrol, and in general smoothness of running it leaves nothing to be desired. In support of these claims a big volume of evidence is adduced. This includes the testimony of leading engineers, of the principals of the chief garages in Johannesburg (notably that of Mr. H. R. Wickens), and the considered opinions of the technical writers on motoring matters in the Press. Major A. M. Miller also pays a high tribute to the value of Penrol for use in aero engines, and no one can rise from a persusal of the series of brilliant testimonials, printed in this issue, unconvinced of the excellent prospects for the new fuel.

The board of directors of the new company is an unusually strong one. It includes some of the best known engineers and business men in Durban and Johannesburg, while it is strengthened by the presence of several prominent Natal men who have had the advantage of late years of closely studying the possibilities of industrial alcohol. Dr Gebbard, the consulting chemist to the company is known to us as one of the most brilliant industrial chemists who have come to this country; and generally it may be said that the venture is launched under the best of auspices.

Big Near East Rand Pumping Scheme.

The closing down of mines on the Near East Rand involves the working mines of the district in increased pumping difficulties. The fact was elaborated in the evidence given before the Low Grade Mines Commission, and the serious plight of the mines on this side of the E.R.P.M. was clearly shown by the various engineers concerned with those properties. In view of the closing of neighbouring mines, the Simmer and Jack is now contemplating the installation of high lift pumping plant of the most modern pattern to handle the water in its deepest workings, and doubtless the same type of centrifugal pump that has proved so successful at Randfontein and at the Crown Mines will be chosen.

* * * *

Gold Mines and Taxation: A London View.

Commenting on the fact that the Union Minister of Finance in introducing his annual Financial Relations Bill proposed a measure of relief for the Rand gold mining industry in regard to Provincial taxation, our London contemporary, the "Financial Times," says:—Assuming that the Provincial tax is duly abolished, the relief afforded to the gold mines will not be of any extraordinary proportions, but it will be an earnest of a more hopeful spirit on the part of the Union authorities such as we have continually pleaded should be shown. Moreover, it will remove the danger that the Provincial Council's appetite might have grown with eating. Originally that body set out to raise some £200,000 per annum, and as the tax was based on a sliding scale on profits, the amounts exacted from the less prosperous mines have not been large. For example, to take two of the first of the 1920 reports to come to hand, the Robinson Company has had to provide only £750 for last year's Provincial tax, while the Rose Deep's allocation is less than £3,000. On the other hand, the rich New Modderfontein Company had to contribute to the Transvaal Council in the year ended 30th June last no less than £55,600. For the same year, however, its dividend distributions totalled the huge sum of £1,155,000.

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.
SURVEYOR'S CERTIFICATES—March, July and October (Extra) Exams. 100 %, 50 % and 66 % respectively of S.A. total.
MANAGER'S CERTIFICATES.—Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A.
OVERSEER'S CERTIFICATES.—Two-thirds of the S.A. total for year 1920. 75 % for January, February, March, 1921.
COAL CERTIFICATES.—Candidates being enrolled
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

ENGINEERING SECTION.

Progress of the Great Vaal River Barrage.

IMPOSING REINFORCED CONCRETE SUPERSTRUCTURE NEARLY COMPLETED—EXCELLENT HEADWAY BEING MADE.

Five months ago we described the building of the great Vaal River Barrage, which is to impound water for the Rand Water Board, to be pumped from a point near Vereeniging. Since then excellent progress has been made with the reinforced concrete superstructure to carry the thirty-six massive steel gates of the barrage. The photos on the first page of this issue illustrate the imposing appearance of the work to-day.

The substitution of reinforced concrete for steel in the super-structure of the Vaal River barrage of the Water Board has greatly added to the impressiveness of that structure, while in no way detracting from its utility. The photos reproduced on the first page of this issue show the barrage to-day, and constitute a striking monument to the efficacy of reinforced concrete, a monument that can be seen for miles across the veldt. It seems now that the superstructure will be finished before the arrival of the gates on the spot, though at one time it appeared likely that the gates would be at the barrage first. The latest report from the Chief Engineer, Mr. W. Ingham, states: "Good progress appears to be made at Messrs. Glenfield and Kennedy's Works with the material to be supplied under the Gate Contract. Mr. Arnot, the Board's Inspector, writing on the 16th February, states that he inspected the twentieth gate now in course of erection, and that there is sufficient material on hand to complete 27 gates. The sleepers and steel track for the Goliath Crane and 24 Roller Cages with wire ropes have been delivered at the Barrage. The Goliath Crane has already been shipped. The supports for five spans of the Government Road Bridge have been erected and the shuttering will be constructed on these supports as soon as the heavy girders for carrying the Goliath Crane are finished." It may be of interest to repeat here some of the principal features of the complete scheme:—

Site of barrage, 23½ miles down stream of the Vereeniging Railway Bridge.

Number of gates, 36.

Width of gates, 30 feet.

Depth of gates, 25 feet.

Depth of reservoir, 25 feet 1 inch.

Additional depth allowed for riparian owners, 1 foot 10 inches.

Quantity allowed for riparian owners, 1,800 million gallons.

Contents of reservoir when full, 13,633,000,000 gallons.

Evaporation from reservoir after allowing for rainfall and reduced area of reservoir during portion of year, 3,382,000,000 gallons.

Catchment area, about 17,119 square miles.

Average rainfall on catchment area, about 28 inches.

Length of reservoir, 39 miles.

Point of abstraction, 1½ miles down-stream of the Veeriniging Railway Bridge.

Average quantity of water per day which the Board is permitted by statute to take from the reservoir, 20 million gallons.

The Steel Barrage Gates.

A year ago the Board accepted the tender of Messrs. Blane and Co., Ltd., of Johannesburg, who are the local agents for Messrs. Glenfields and Kennedy, Ltd., of Kilmarnock, for the supply and erection of the 36 steel gates and accessories, two spare gates and one "Goliath" crane to lift 30 tons, and also for the hand-railing required for the Public Works Department bridge which is being erected on the barrage piers. The total amount of Messrs. Blane's tender was £159,590, and is made up as follows:—(a) Supply, delivery and erection of 36 steel gates, operating gear, and all accessories, excepting the counter-balance boxes, which are to be made by the Board of reinforced concrete, £150,477; (b) Supply, delivery and erection of two spare gates similar to above, £4,052; (c) Supply, delivery and erection of one "Goliath" crane to lift 30 tons, £4,250; (d) Hand-railing for Public Works Department, £811; total, £159,590. The gates are well in hand, but delivery will not be made for some months owing to unsatisfactory labour conditions in Great Britain. At the barrage the reservoir will be a quarter of a mile wide, and a mile wide at the broadest points. The service reservoirs and clear-water tanks are as follows:—Vereeniging (2), 10,000,000 gallons; Zwartkopjes, 5,000,000 gallons; Treurfontein, 5,000,000 gallons; Simmer and Jack, 2,500,000 gallons; total, 22,500,000 gallons. The total length of the pipe line is 14 miles, and will be composed of 18, 24, 27, 29, 30, 33 and 40 inch pipes.

Pumping Plant.

The pumping plant at the river pumping station at Vereeniging will be of the electrically driven centrifugal type and the motor will be installed at a point well above the highest known flood level. For the photos reproduced in this issue we are indebted to Mr. Ingham and Mr. Mason, the engineers to the Rand Water Board.

Automatic Mine-Car Recorder.

A recorder, to register the number of cars trammed from a mine, is described in a recent bulletin of the Institution of Mining and Metallurgy by John J. Freund. In the case in question the workings were situated on a range of hills which rose abruptly about 1,000 to 1,200 ft. above the adjoining plains. The deposits were situated on the plateau at the top of the hill range and also on the brow of the hill, extending about 200 to 300 ft. below the crest. A main haulage-level ran along the hill-slopes about 350 ft. below the crest, and this was fed by various inclined tramways which rose above the main hauling-level and served the various workings. From the main haulage-level the ore was lowered to the foot of the hill range by a self-acting "*va-et-vient*" incline about 2,200 ft. long, which rose 812 ft vertically. The coolies were paid on output, which was measured by the tram-wagon full, but owing to the untrustworthiness of the native staff the want of some automatic check on the counting was desirable.

The arrangement finally evolved was as follows. Into the centre of the main axle of the inclined gear a square hole about 1 in. deep and ¾ by ¾ in. was made, and into this the squared end of a 1-in. round-iron rod was placed. This rod was threaded and revolved with the main axle, first in one direction, and then, with the next trip made, in the other direction. On the threaded portion of the 1-in. rod (in this case about 18 in. long) was placed a nut with shoulders. The shoulders moved in grooves to prevent the nut from revolving, and so caused it to travel up and down the rod. Each revolution of the main axle meant that the trams on the incline travelled 20½ ft., so that about 107 revolutions were required to make a complete journey. The screw threads on the 1-in. rod were Whitworth, 8 per inch, so that the nut moved about 13½ in. per trip. Attached horizontally to the nut was a spring.

The counter used was of the ordinary type. The rectangular box may have been 10 by 5 by 4 in., and the small lever projected 2 or 3 in. A spring fixed to the nut came in contact with the lever on the counter and moved it alternately up and down for every trip made on the incline. The mechanism was enclosed in an iron box, like a small safe. Owing to a certain amount of slip between the hauling rope and the main wheel, the position of the nut, which moved up and down the 1-in. rod, required adjusting once a week. This was effected by lifting the rod out of the square hole in the top of the main axle and turning the rod around until the nut was in the desired position, when the rod was again dropped into the top of the axle and the box closed. A projecting piece of iron fixed to the door was then passed over a collar on the rod, making it impossible to lift the rod and revolve it independently of the main axle. The arrangement worked satisfactorily. The entire mechanism, excepting the counter, was made by a native blacksmith having only the usual hand tools.

National Mining Corporation.

ANNUAL MEETING DISCLOSES A BIG DEPRECIATION OF ASSETS—THE COMPANY'S AFRICAN INTERESTS.

Stocks and shares all the world over have recently depreciated enormously in price, and as an instance of how the best made schemes of men may gang agley reference may be made to the report of the National Mining Corporation, recently issued in London. This company is intimately associated with several important South African mining companies.

We are indebted to our able London contemporary, the "Financial Times," for the following account of the meeting and of the facts and figures disclosed by the chairman.

In view of the high expectations aroused at the time of the flotation of the National Mining Corporation eighteen months ago and the way in which these have so far been disappointed, there seemed every probability that the first annual meeting of the concern would prove an animated affair. This expectation was to some extent justified by the event. But the discussion proved much on a par with the familiar proverb relative to March weather—"in like a lion, out like a lamb."

Huge Depreciation.

The principal new point which emerged from the annotation of the accounts by the Chairman (Mr. Herbert Guedalla) was the rather startling one that the cash assets of £355,700 were largely offset by contingent liabilities to the extent of £245,000 in respect of uncalled capital, participations and so forth. The question everyone was asking, however, was how the directors accounted for the huge depreciation—namely, £391,000—which had occurred during the past year in investments originally costing the corporation over £900,000. As surmised, the Chairman admitted that by far the largest part of the depreciation had resulted from investments in the Burma Corporation, the Tanganyika Concessions, the Santa Gertrudis Company, and also—somewhat to the surprise of many at the meeting—the Anglo-American Corporation of South Africa. Dealing with these various undertakings in turn, Mr. Guedalla referred, in the case of the Burma Corporation, to its recent large increase in lead production, and stated that during the four months ended the 30th November a profit of £76,000 monthly was being made. Subsequent results must, however, have been affected by the fall in the prices of lead and silver, partly offset by a saving in working expenses due to the decline in the value of the rupee. Successful trials of the Elmore process gave ground for the belief that the profits would be considerably increased by a good recovery from the "middlings." "The future of this magnificent property is assured, and it is only a question of time (asserted the Chairman) when the shares will reach their true value, which is a far higher figure than that at which they stand in our books."

Tanganyika and Anglo-Americans.

In the case of Tanganyika shares, the depreciation was, the speaker pointed out, largely attributable to the question of exchange, the low price of copper and the delay in the railway construction programme. A large increase in the output of copper from concentrates was to be anticipated. The holding in the Anglo-American Corporation secured the National Mining Corporation an interest in some of the best mines in the Far Eastern Rand, and also in the diamond fields of South-West Africa. As to the Santa Gertrudis Company, the most recent information was to the effect that while the increase of the mill from a capacity of 40,000 to 60,000 tons per month was in course of completion the treatment had to be temporarily limited to 33,000 tons per month, owing to the drought and shortage of power. Every effort was being made to reduce costs and to concentrate work upon the company's newer properties, where respectable profits can, it is believed, be made even at the present price of silver, at all events so soon as the mill can be worked to its full capacity.

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TO BE ISSUED IN JUNE, 1921.

Randfontein Central Turns the Corner.

AN "UNFORTUNATE" YEAR PRECEDES A "DIFFICULT" ONE—IMPROVED RESULTS IN SIGHT.

Randfontein has hitherto been the white elephant proposition of these fields. It is not too much to say that the various subsidiaries which to-day constitute the Randfontein Central property have without exception been the largest disappointment of the Witwatersrand. However, when the Barnatos acquired Randfontein, they immediately set about putting their new house in order in accordance with the sound and progressive policy pursued by this group at other mines. A reorganisation scheme was put into practice and matters have so far progressed that Randfontein appears to be at last within measurable distance of achieving a larger measure of success than it has ever hitherto enjoyed.

In the following report Professor Lawn deals with what has been achieved at Randfontein during the last year, and in the concluding sentence of his review he strikes a characteristically cautious but optimistic note when he writes "the future holds out prospects of improved results for many years to come."

Professor Lawn's report on the Randfontein Central provides an admirable survey and review of the position and prospects of that great and promising property. The report sums up the position in the fewest possible words and we offer no apology for reproducing in full the eminent Consulting Engineer's considered opinions on the chequered past and the bright future of the mine. He writes:—"The year was an unfortunate one for your mine. At the end of March there was a cave in Block A Shaft which stripped the timbers from the 10th to 19th Levels. This took three months to repair; and during these months the mill was deprived of some 20,000 tons a month of good ore which would otherwise have been available. Then in July, immediately after the Block A Shaft was in working order, the Robinson Shaft caved so badly that it was not thought wise to attempt to repair it, as it could scarcely have been got into operation again before the North Vertical Shaft was ready for working. Additions in connection with plant prevented the North Vertical Shaft coming into commission quite as soon as had been hoped, and it was only in December that ore was actually hoisted through this shaft. Again the Northern Section of the mine had always been disappointing and the values of the ore available got so low that it was decided in June to close down this section. A start was made by stopping ore breaking in No. 8 Shaft, and later in No. 9 Shaft. The working of the East Reef, owing to the improvement in the gold premium, ran on until the end of the year. In the latter half of the year there was also a severe shortage of native labour on your mine. All these causes tended to reduce the amount of ore which could be won. As a consequence the quantity of ore crushed amounted to 1,560,000 tons which was 169,400 tons less than the tonnage milled in 1919.

Working Costs.

Working costs at 27s. 6d. per ton were 5s 5d. per ton more than for the previous year, the increase being largely due to increases in wages, but also in part to the smaller tonnage crushed. Miners' Phthisis Contributions amounted to £62,031 as compared with £23,060 for 1919. Gold Realisation Charges and Bank Exchange also account for an increase of 9d. per ton milled. The Working Profit for the year amounted to £158,100 which, owing to the smaller tonnage crushed and the heavy increase in Working Costs, is much lower than the profit for 1919, which amounted to £309,089.

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SALES REPRESENTATIVES WANTED.

A well-established American firm, doing 60 per cent. of the world's business in its line, with banking references in all of the capitals of the world, is seeking representatives for the sale of its product—Diamond Soot Blowers—in South Africa.

Diamond Soot Blowers are essential to the efficient operation of high-pressure steam boilers. They remove all soot and ash deposits from the heating surfaces regularly and thoroughly by means of steam jets, thereby saving 4 to 8 per cent. fuel, increasing boiler efficiency 3 to 4 per cent., and saving 75 to 90 per cent. of labour used in cleaning.

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Equipment adapted to all types of boilers. Sales range from 300.00 dollars to 30,000.00 dollars. Splendid opportunities for sales engineers and engineering companies experienced in handling power equipment who have entree to the largest industrial and electrical power plants.

In writing, give in detail the character and extent of present business, banking references, and general information.

PRESIDENT,
DIAMOND POWER SPECIALTY COMPANY,
DETROIT, U.S.A.

Production Figures.

110,811 ounces of fine gold were produced during the year at an average cost of 104s. 1d. per fine ounce, as compared with 108,596 fine ounces in 1919 at an average cost of 81s. 5d. per fine ounce. The exact price obtained for the gold has not yet been ascertained, but the average price as worked out from the weekly returns was 112s. 7d. per fine ounce.

Development.

Sinking in the North Vertical Shaft was stopped at a depth of 3,896 feet, in the early part of the year, whereas sinking in the South Vertical Shaft was carried on to the end of the year, and only completed in January of the current year, when it had reached a depth of 4,712 feet. The reason for the greater depth of the South Vertical is that the average depth of the workings in the section of the mine which will be worked from the South Vertical Shaft is greater than the average depth at the North Vertical Shaft. The West Reef was intersected in the South Vertical Shaft at a depth of 4,130 feet, the value being 12·1 dwts. over 48 inches, a highly satisfactory strike. The Randfontein leader was not intersected as this shaft happened to pass through a patch where the Randfontein leader is non-existent, such patches occurring occasionally in the mine. The North Vertical Shaft is already in commission as mentioned above, and it is expected that the South Vertical Shaft will be brought into commission by July or August. Sufficient ore has now been bottomed by the two vertical shafts to last for many years to come, and provided that reasonable working conditions prevail, the new era should start for your property during the current year, although the full advantages of the reorganisation will not be felt until towards the end of the year.

New Pumping Plant.

A very fine pumping installation has been installed at the 25th Level of the North Vertical Shaft. It started working in April last, and has proved in every way satisfactory. It has replaced a very large number of pumps distributed over the old shafts of the mine at various levels and has not only saved expense, but has been a great help to continuous work.

The Southern Section Prospects.

The development of the whole of the Southern Section of the mine from Mynpacht to Porges was very satisfactory as you will see from the Manager's Report, the percentage of payability being high and the values well maintained. At the end of December last the ore reserves were recalculated and it was seen that there were 3,593,410 tons of ore developed of an average value of 6·2 dwts. over a stoping width of 49 inches; this quantity includes all ore of a value of 5 dwts. and over.

The Randfontein Deep Deal.

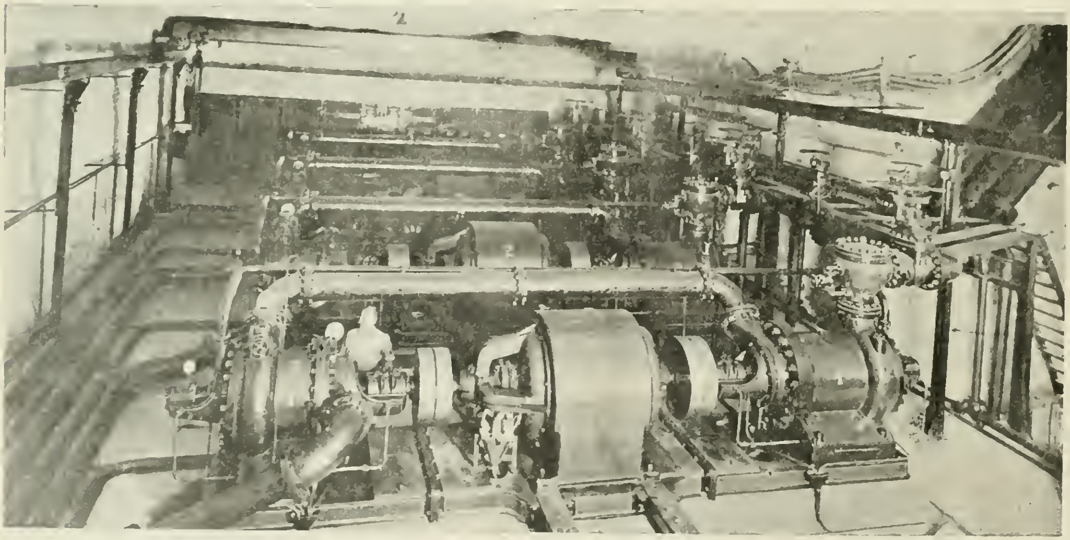
Owing to the decision to abandon the Northern Section of your mine as mentioned above, it was felt that it would be wise to come to an arrangement with the Randfontein Deep, Limited, to secure their ground. The transaction was completed in July, and prospecting was carried on during the latter part of the year, the results obtained were encouraging and two incline shafts have been started from the surface to work this section of your property. It is not hoped to work the Randfontein Leader or West Reef in this ground, at any rate for many years to come, but the Battery series of reef outcrops there. There are two payable leaders in this series, and although the values are not high, it is expected that a large tonnage of moderate grade ore will be obtained at a moderate cost. Finally, although the current year will no doubt be a difficult one for your mine, it is hoped that the worst time is past and the future holds out prospects of improved results for many years to come.

SOUTH AFRICAN RAILWAYS & HARBOURS.
VACANCY FOR STRUCTURAL STEEL DRAUGHTSMAN.

Applications are invited for the above-mentioned vacancy in the Office of the Chief Civil Engineer (Bridges), S.A. Railways and Harbours, at Headquarters, Johannesburg.

Salary £441 per annum, with local allowance of £66 and abnormal cost of living allowance, which latter is subject to periodical revision.

Applicants should submit, in writing, particulars of education and training, together with copies of testimonials, to Chief Civil Engineer, S.A.R. Headquarters, Johannesburg.



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Miners' Phthisis and Ventilation.

PAPER BY MR. C. J. GRAY—WHERE METHODS ARE OPEN TO IMPROVEMENT—MEASURES REQUIRING WIDER ADOPTION—SECURING BETTER VENTILATION CONDITIONS.

As promised in our last issue, we reprint below the paper read at the last meeting of the Chemical, Metallurgical and Mining Society by Mr C. J. Gray, Chief Inspector of Mines, Johannesburg, on Miners' Phthisis. The paper was as follows:—

Though immense amounts of thought, work and expenditure have been devoted to prevention of miners' phthisis in the mines of the Witwatersrand, and great progress has been made, the disease is still very serious. As those who do not know the facts are tempted to assume that all that is possible to deal with dust underground has been done, it may serve a useful purpose if I point out some of the respects in which present conditions and measures are open to improvement. While the question as to what can be done is dominated by economic considerations, and it may be impracticable to make profit or avoid loss at a particular mine and at the same time do all that is desirable, even at such a mine clear recognition of how and where safeguards are weak may result in improvement.

Probably the human factor will be dealt with specially by other contributors to this discussion, but there are a couple of points to which I wish to draw attention. Some officials, many men, and most natives, though they know that dust is dangerous, do not realise fully that the danger is from air-borne dust, which is quite invisible to the unaided eye, and of which the senses may give no indication. They also fail to realise the conditions under which such fine dust is formed or accumulates in the air. If we had in every miner's hand a simple dangerous-dust detector such as the safety lamp is for firedamp, knowledge would soon become general; in its absence propaganda on the lines of the "Safety First" movement, lectures, informal instruction by officials, and extended use of and demonstration with the Konimeter are desirable.

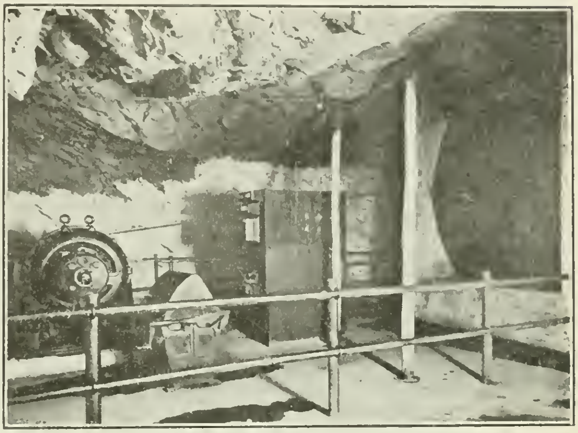
Human nature being what it is, the common systems of payment on economic results tend to neglect of phthisis precautions. The white man is tempted to permit "lashing" or drilling when the water supply is off or defective in pressure if his pocket will suffer through delay, and the native who fears that he will get a loafer ticket or lower pay for failure to drill his full number of inches is similarly tempted. Dry drilling or lashing is usually due to fear of loss of time from failure of the water supply. If a contract, bonus or task system is to be maintained, discipline alone should not be relied upon, but so far as practicable, by such measures as providing machine drills which will not work without adequate water supply, wrong-doing should be made difficult.

Ventilation.

Ventilation, if not the most important factor in phthisis prevention, is certainly one of the most important, and much is to be gained from its improvement. If silica dust causes miners' phthisis, a badly-ventilated mine, other conditions being the same, must produce more phthisis than a well-ventilated mine.

The problem to be dealt with in ventilation of a phthisis mine is very similar to that of ventilation of a fiery colliery. In a colliery, issue of firedamp cannot be prevented, but safety is attained by providing such an air supply and so distributing it that in each working-place the firedamp is sufficiently diluted to be harmless. Care is taken that a single air current circulates through a small number of working-places only, so that in the last it is still harmless, despite accumulation of firedamp in it from other places. In a phthisis mine much can be done to prevent issue of dust into the air, but in practice some must issue. When once suspended in the air, the dangerous dust, which is so fine that it behaves very like a gas, is swept along in the air current. To make it harmless it should be dealt with like firedamp; sufficient air should be provided to dilute it, and the dust-charged air so distributed that there shall be no excessive accumulation of dust in the air breathed in any working-place.

Though the principle just stated is not modified, I should mention that we are so fortunate as to have a means of taking dust out of the air current which is not available for firedamp. I refer to water sprays and atomisers, which, though not very important directly, being unreliable and inefficient, are sometimes important indirectly, as they enable the air to take up moisture. If dust-laden air in the lower workings is nearly saturated it will, as it rises higher and therefore falls in pressure and temperature, deposit some of its moisture as mist. As the water globules in the mist form round dust particles, they weight those and cause them to settle. That action having taken place, the air may be considered as fresh air for dust dilution purposes in workings above, though not fresh air as contemplated by the Mines and Works Regulations.



A Fan in the Robinson Deep.

Coal and Gold Mines.

Ventilation on the Rand is far short of fiery colliery practice. Generally the total volume of air circulating in a Rand mine per minute is much less than would be required for a colliery with a similar number of underground employees, but comparison with regard to the distribution of the air is still more unfavourable. The long inclined downcast shafts, with their numerous connected levels or crosscuts, which are usually closed off by single ventilating doors only, are very poor main airways. The doors are often leaky, and not infrequently they are propped open. After the air leaves the shaft there is generally practically no attempt made to control its distribution. Much of it short circuits up through stopes which are not being worked, part only serving working stopes, while very little gets into the development ends, most of which are ventilated during the working shift only intermittently by the compressed air supplied to machine drills. There is practically nothing which corresponds with the stoppings and brattices used in fiery collieries to lead the air up to the faces of headings and other working-places. Practically nothing is done to split the air currents into satisfactory ventilation districts, and I have [illegible] seen an air crossing in a Rand mine, though there are a few on the East Rand.

Of course there is a reason for the present position. It is past failure to realise fully the importance of ventilation as a factor in dealing with dust evil. In the recent past it was considered that, apart from special places, the ventilation of the mines was generally reasonably good, the temperature and the percentage of CO_2 allowed by the regulations being alone taken into account. The mine workings have not been laid out with a view to good ventilation as ventilation must now be judged, and to provide a really good system for an old mine is often a very difficult and costly matter. Much has been done, especially in the newer mines, in recent years, and if the position is still far from ideal it has markedly improved on what it was.

Some Suggestions.

I consider that ventilation conditions could be further improved in many mines of the following measures were more widely adopted: (a) Substitute stoppings for doors on levels which are permanently or temporarily out of use. (b) Limit the number of levels for tramming to the shafts by concentrating hoisting at particular levels and lowering rock to these levels by self-acting inclines or otherwise through stopes or winzes; avoid ore passes as much as possible. (c) Double all ventilation doors and make them all self-closing. (d) Place doors carefully where they will be as free as possible from crush or other damage, and where they will not be kept open by standing trucks. (e) Lead the ventilating current out to the working stopes by closing off passage through old stopes nearer the shaft by sandfilling or packs. (f) Regulate the amount of air passing through working stopes which get an unduly large proportion by constricting the air passage or, preferably, where possible by making an easier passage for the air passing through those stopes which get an unduly small proportion. (g) Cause the air current to follow the stope faces by closing passage through the centre of the stope by continuous stulls or packs. (h) Provide airways into working stopes apart from boxholes, which may be partially or completely blocked by broken ore. (i) Make development-places beyond the air current as short as possible, and provide good auxiliary ventilation in them, preferably by electric fans. (j) Provide good auxiliary ventilation in all sinking shafts.

The water service for dust allaying is a feature of Rand practice for which credit can be taken. The idea of applying water and preventing dust being formed is an excellent one, and, at first sight at least, far better than dealing with the dust by ventilation. Undoubtedly the water services have done much to reduce miners' phthisis, and any diminution in their present efficiency is not to be contemplated, but they are not and, in my opinion, never will be adequate alone to cope with the danger. The water supply to all working-places involves a most elaborate and extensive system of dams, settling pits, steady heads, pipes, etc., and under mine conditions the risk of interruption, reduction, or fouling of the supply is great. Silting up of dams, blockage of pipes by incrustation sediment or air lock, breakage of pipes by corrosion or by injury from either trucks, rock movements or blasting, and undue use or wastage of water by individuals are ever-recurring troubles. It is often found on visits of inspection to working-places that temporarily there is either no water supply or a supply which is deficient in cleanliness or pressure, or in both. The efficient use of water to keep down dust, if the supply is available, requires the constant and conscientious attention of both whites and natives, and often the sacrifice of their personal comfort, or perhaps even health. Standing in water, sitting on wet rock, or working under a spray is not very desirable, and the temptation to be sparing in use of water is often given way to.

Recent investigation has shown that the water blast as used is a very poor safeguard. Even when it is working properly the force of explosion of the shots will drive fine dust through the spray from the water blast, but in practice the water blasts seldom work properly. Individual water blasts will work well when tried during the working shift, but when all in the mine are open at blasting time and air-pipes in winzes, etc., are blowing there is often insufficient compressed air to supply them all, and they fail hopelessly. Therefore when the lashing shift goes into development-places the approaches to the faces often are not cleared of dust, and at the faces, though the compressed air from the water blast may have cleared away fumes and dust, the broken rock is often dry, and dust is raised in watering down.

Recommendations.

To improve matters I should recommend: (a) More attention to the settling and filtering of water so as not only to remove silica particles, but also those deposits which may be formed in the aeration or neutralisation of water supplies. (b) More careful neutralisation and control over the contents of the water, so as to avoid corrosion or incrustation of pipes, etc., and early replacement of corroded or incrusted pipes. (c) Greater care to ensure that main pipes are of ample size, so that they will allow the required flow without undue friction when the use of water is at its maximum. (d) Greater care in the placing and protection of water pipes. (e) Extended use of water- (not air) fed machine drills. (f) Greater care in placing sprays and atomisers so that they will not wet persons unnecessarily. (g) Attention to the drainage of development ends so that water will not accumulate there. (h) Use of water blasts which are economical in compressed air and will work with air at low pressure.

Though improvement may be made, I think that when owners and managements have done all possible with regard to use of water, there will still be frequent failures to prevent formation of dust. The simplicity and constancy of action of a good ventilation system can never be obtained in the use of water, and therefore it is important to back the use of water by ventilation.

While in this contribution to the discussion I have confined myself to the question of dealing with silica dust, I recognise the importance of further investigation of the conditions under which persons become sufferers from miners' phthisis, and also of the conditions under which, though exposed to silica dust, persons may be more or less immune. Research may bring new discoveries of the greatest importance in control or prevention of the disease, but in the meanwhile it seems wise to press on, as in the past, with the fight against silica dust. We are now aided by new weapons and knowledge, and can reasonably hope that the success of the past will be surpassed by that of the future.

ADDRESS BY DR. ORENSTEIN.

"The Most Important Single Problem."

A brief reference was made in a previous issue to opening remarks by Dr. A. J. Orenstein, in his Miners' Phthisis Symposium, and are now glad to be able to give the address in full. Dr. Orenstein said: The problem of Miners' Phthisis is undoubtedly the most important single problem the gold mining industry has to face to-day. Not only is the monetary outlay—direct in compensation, and indirect in preventive measures—so great as to constitute a factor which might be the definitive cause of closing down low-grade mines, but, what is even of greater importance, this disease causes premature deaths, sickness with consequent loss of production, and entails so much pain and misery on the sufferer and his dependents, that the combined effect of these more than outweighs even the enormous monetary losses involved. It is particularly fitting, therefore, that one of the first occasions on which the machinery now provided by the A.S. and T.S. is being put into use, should be for the purpose of conducting a thoroughgoing interchange of views on this arresting problem. It is also most proper that the Chemical, Metallurgical and Mining Society should sponsor this symposium, for it was before this Society that the early papers were read by the pioneers in this field in South Africa.

Cause of Slow Progress.

In my own mind I am satisfied that scattered among the members of the various scientific and technical societies there is sufficient essential information now, which, if focussed and applied, would carry us a very long way on the road towards our goal—the total elimination of this disease. I have come to feel more and more strongly, that our comparatively slow progress has been due to three principal causes. First: Waiting for a counsel of perfection—for the discovery of the one thing to do which would be 100 per cent. efficient in preventing miners' phthisis.

Second: The magnitude and the many difficulties of the problem; the indifference and carelessness of a large body of the underground workers; the overwhelming burden of routine duties imposed on mine officials; and last, but not by any means least, the fact that we have become used to the existence of this disease, have engendered a mental inertia, a spirit of *laissez faire*.

IN A RAND STOPE.

In the accompanying article, Dr. Orenstem and Mr. Gray Inspector of Mines for the Johannesburg District, discuss Phthisis and Ventilation.

Third: We have failed to avail ourselves of the stimulus and other advantages inherent in conferences of large bodies of scientific men who, because of varied training and widely differing daily professional experience with the same problem, view it from various angles. An educated mind has been defined by Spencer, I believe, as a mind capable of viewing a problem from every possible angle. Conferences such as this one can be regarded as the application to the problem in hand of a super-educated mind: The combined reasoning powers and experiences of the engineer, the chemist, the practical miner, the geologist, the medical practitioner, the pathologist, etc. The mental field of each specialist will be expanded and corrected by the light thrown upon it by other workers, and the harvest should be a bountiful one.

Co-operation Required.

Miners' phthisis prevention is essentially a problem the solution of which requires the co-operation of workers in many fields of science and technology. It is only through such co-operation that the problem will ever be solved. I do not by any means refer now to the formation of Committees or Commissions, which have their uses, without doubt, but to constant co-operation, contact and interchange of views and ideas—those flitting flashes of light which come and go, and are forgotten, or are never born except as the product of contact with another mind interested in the same problem. These conferences, one confidently anticipates, will give the necessary impetus towards discussion, and engender a broader outlook and keener interest, and, perhaps—who knows?—give birth to the great illuminating thought which will bring us to the much-prayed for solution. I have said that one reason for our comparatively slow progress in combating miners' phthisis has been the mental attitude of waiting for the 100 per cent. efficient preventive measure. It should ever be borne in mind, however, that this history of preventive medicine teems with instances of brilliant results achieved by the simultaneous application of a number of measures, each of but low efficiency. One need not go far afield for an example of this—it is at our very doors. In 1910 the death rate from all diseases among the natives on these mines was about 35 per 1,000; in 1915 it was about 13 per 1,000; in 1920—about 11 per 1,000 (excluding deaths due to the epidemic of influenza prevailing in the last three months of the year). Such an achievement in one decade is without parallel, so far as I am aware, in industrial hygiene, and it is due not to one perfect preventive measure, but to the cumulative effect of many measures, any one of which by itself is of very low efficiency indeed. It has been said that the great reduction in the pneumonia death rate is the deciding factor. That is not so. If pneumonia were altogether eliminated, and other causes of death remained as they were in 1910, we would still have a mortality of 22 per 1,000, instead of 9 per 1,000, as was the case in 1920. This means a potential saving of about 2,000 lives in 1920 alone, achieved by applying a large number of safeguards, no single one of which is of very high efficiency.

Progress of the Transvaal Silver and Base Metals.

A very satisfactory report was issued this week by the Transvaal Silver and Base Metals, Ltd., for the period ended March 31. The report gives a very detailed list of the results of sampling on Dwarsfontein No. 145, and shows that the total ore, fully and partially developed at March 31, including that remaining in the old mine, amounts to, approximately, 121,000 tons. It is encouraging to note that of the ore remaining in the old workings, which so far have been sampled, no less than 93·5 per cent. is payable under present conditions. The large tonnage not yet valued is accounted for, partly, by inaccessibility for sampling, and partly by the fact that certain winze connections have not yet been made, and that it would be undesirable to value these blocks of ore until this work has been carried out. Active developing operations have been undertaken during the quarter, the total footage accomplished being 2,640 feet, of which 2,095 feet were on the lode. Sampling results are available for only 1,890 feet, owing to the delay which is experienced, pending completion of the assay office, in sending the samples to Johannesburg. Of the distance for which values are available, 830 feet are payable, showing a stoping value of 13·0 per cent. lead and 11·6 ozs. silver per ton (worth, at to-day's prices 80s. 10d. per ton) and 1,060 feet unpayable, showing 1·7 per cent. lead and 1·5 ozs. silver per ton (worth 11s. 1d. per ton). The concentration plant has been ordered, and provided that reasonable delivery of the various items which are being purchased in Europe is obtained, the full plant should be in operation by October next. Dr. Heberlein has arrived from Europe, and, for the past month, has been carrying out a close investigation of local conditions. As a result, he is of opinion that treatment of the ore offers no difficulties, and that, from the average grade of the ore developed, it will be possible, even with the first small unit of the plant about to be erected, to produce and realize bullion at an approximate cost of £21 per long ton. The value of this bullion at to-day's prices (viz., £20 per ton for lead and 3s. per oz. for silver) would be £35 per ton, so that the profit would be in the neighbourhood of £14 per ton of bullion produced. Dr. Heberlein estimates that the first unit of the new plant should be capable of producing 750 tons of bullion per month, although, at the start, it is anticipated that the output would be only in the neighbourhood of 500 tons per month. The plant is being laid out so as to be capable of future extension.

An extraordinary meeting of shareholders in this Company was held on Friday. The proceedings will be dealt with next week.

Mr. A. J. Brett has taken Mr. E. H. Clifford's place on the engineering staff of the Central Mining Rand Mines Group, and Mr. H. S. McGregor, late of the Simmer Deep, has taken Mr. Brett's place as one of the technical advisers to the Chamber of Mines. Mr. Clifford is taking a "busman's holiday" by visiting all the principal mines and mining fields of the world.

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The Week in the Sharemarket.

SHARP REACTION IN LONDON BUYING—LEADING GOLD STOCKS HIGHER—BETTER TONE IN DIAMOND AND COLLIERY SHARES.

Better advices and some buying from London on Wednesday changed the tone and temper of the market. The bears, few though they be, looked far from pleased with the turn taken by events, and their chagrin was not diminished by the steady tone of the market on Thursday. Naturally, all the gilt-edged Far East Rand stocks were the first to gain, and their quotations have appreciably improved on the week. Despite the gloomy nature of the Budget speeches, there is a much better feeling throughout business circles; and relief is expressed that the worst is now known. Union stocks have firmed up in consequence, and the prospects generally have greatly improved. Even the news from Great Britain regarding the coal strike is better at the time of writing, and there seems to be ground for hope that the conference on Friday of this week may lead to negotiations being reopened. It may be opportune here to recall the remarks made by Mr. R. T. Mathison, the new Chairman of the Stock Exchange, on the occasion of his inaugural address to the members of that institution the other day.

Referring to the financial position generally, Mr. Mathison said: "We have been passing through a long period of depression and stagnation, the causes of which are well known to you. But we have been through such periods before, and we always appear to emerge successfully from them. Unfortunately at the present time it seems to be the fashion to be pessimistic. The Prime Minister tells us that the financial position is serious, and one of our leading magnates prophesises that a creeping paralysis will soon be passing over Johannesburg. We have heard of these prophecies before, and we may hope that this one may also be falsified. Now it is difficult under these circumstances to be very optimistic, but the true optimist is the man who takes the long view, and the long view is the one that is always right in South Africa. However, there are one or two favourable features in the situation, and these are mainly political. Without trending unduly on politics, I may say that one of them is that we have now in power a Government sufficiently strong to initiate an active and progressive policy in regard to the development of the very great resources of the country—resources, I think, equal to the resources of any other British Dominion. The development of these resources must result in greatly increased prosperity in South Africa, and that prosperity you, as members, must participate in." Let us hope that Mr. Mathison's optimism may be justified!

	Fri. 15th.	Sat. 16th.	Mon. 18th.	Tues. 19th.	Wed. 20th.	Thurs. 21st.
Anglo-Am. Corp.	19 0*	19 0*	19...0*	19 6*	20 3*	20 6
Apex Mines	—	6 6*	6 6*	6 6*	—	6 9*
Bantjes Cons.	5 6	5 0*	5 5	5 0	5 4*	5 4
Brakpan Mines	45 0*	47 0*	46 0*	48 6*	50 3*	50 0*
Bushveld Tins	0 6*	—	6*	—	0 6*	0 6*
Cassel Coals	—	—	30 0*	30 0*	—	—
Cinderella Cons.	2 3*	—	—	—	2 0	2 0*
Con. Mines Select.	—	—	—	—	16 0	—
City Deeps	40 0*	—	—	40 6	41 0*	41 3*
Clydesdale Colls.	25 0*	25 0*	—	25 0*	25 0*	25 6*
Con. Diamonds	13 6*	13 6	—	13 9	14 0	14 0
Con. Investments	—	—	—	22 0*	23 6*	—
Con. Main Reefs	10 0*	10 0*	10 3*	10 3*	10 3*	10 6
Coronat. Freeholds	0 9*	0 9*	0 9*	0 9*	1 0	0 9*
City and Subs.	—	—	—	—	—	6 3
Coronat. Syndicates.	—	—	—	—	—	2 6*
Crown Diamonds	2 6*	2 6*	2 6*	2 7	2 7*	2 9
Crown Mines	—	—	—	—	38 0*	39 6*
Daggafontein Mines.	3 0	2 9*	3 0	3 0	3 0*	3 4†
Durban Rood. Deeps	2 6*	2 6	2 6*	2 6*	2 6*	2 6*
De Beers Pref	202 6*	—	200 0*	200 0*	202 6*	30 0*
Do. Deferred	—	—	—	230 0*	230 0*	—
E.R. Coals	1 11*	2 0*	2 0*	2 0*	2 0*	2 0*
E.R. Deeps	0 6*	0 6*	0 6*	0 6*	0 6*	—
E.R. Minings	—	—	6 9*	—	—	—
E.R. Props.	4 6*	5 0*	4 6*	4 6*	—	5 0
E.R. Debentures	—	—	—	£69*	£69*	£69*
Eastern Golds	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Frank Smith Dmds.	2 11	2 11	2 11	3 0*	3 0	3 1
Geduld Props.	46 3*	46 6*	46 7½	47 0	47 3	47 9
Glencoe Collieries.	11 3*	11 3*	11 3	11 3*	11 4*	11 3*
Glynn's Lydenburgs	7 6	—	7 6*	8 9†	8 0†	8 9†
Govt. Areas	—	78 0	78 0	78 3	79 0	79 3
Jupiters	—	3 8	—	3 6*	3 6*	3 6*
Hume Pipes	19 0*	19 0*	19 0*	19 3*	19 0*	19 0*
Knight Centrals	4 1*	4 1*	4 3*	4 3*	4 6	4 3*
Knights Deeps	14 9*	15 0*	—	—	15 0*	15 0*
Lace Props.	7 3*	7 3*	7 3*	7 0*	7 6*	7 3*
Leeuwpoort Tins	6 6*	6 6*	6 6*	6 0*	—	8 0
Lydenburg Farms	4 9*	4 6*	4 9	4 9*	4 9*	4 11½
Meyer and Charltons	—	—	—	—	83 6*	82 6*
Middelvlei Estates	—	—	—	—	1 0*	—
Modder B.'s	24 6*	24 3	24 6*	24 6*	25 6	25 9
Modder Easts	42 0	42 3	43 9	42 9	43 9	44 3
Modder Easts	10 0*	10 0	10 3	10 3	10 6	11 1½
Do. Opts. (4 yrs.)	0 3†	—	—	0 1*	0 1*	—
Natal Nav. Colls.	32 0†	32 0†	30 0*	—	32 0†	30 6*
National Banks	—	—	220 0a	—	—	—
New Eland Dmds.	19 0*	20 0*	21 0*	22 6	—	22 6*
New Era Cons.	6 0*	—	6 3*	6 3*	6 6*	6 9*
New Geduld Deeps	1 3*	1 3*	1 4*	1 4*	1 3*	1 3*
New Kleinfonteins	5 4*	5 6*	5 6*	5 6*	5 6*	—
New Modders	63 0*	63 0	63 6*	64 9	64 9*	65 6
New State Areas	19 6*	19 3*	20 6*	20 0*	21 6*	21 9*
Nourse Mines	—	—	6 6*	7 9*	7 9†	—
Premier Prefs.	—	—	110 0†	110 0†	—	—
Pretoria Cements	47 6*	48 6*	49 0	50 0*	53 6	52 6
Princess Estates	0 9*	0 10*	0 10*	0 10*	—	0 11*
Rand Collieries	—	1 3†	1 6†	1 6†	1 6†	1 6†
Rand Nucleus	—	0 10*	1 0	—	—	—
Randfontein Centrals	9 0*	—	—	9 0*	9 6*	15 0
Randfontein Est.	—	14 0*	14 1*	14 6*	15 0	—
Roberts Victors	—	8 0*	8 0*	9 0†	8 0*	8 3*
Rooibergs	3 0*	3 0*	3 0*	3 1*	3 2*	3 8*
Roodepoort Uniteds	—	1 0†	—	—	—	—
Rouxvilles	2 6*	2 6*	2 6*	2 7*	2 6*	2 5*
Ryan Nigels	3 6*	—	3 9*	—	—	—
S.A. Alkali	17 6*	17 6*	18 6*	18 9*	19 3	19 6
Do. Options	—	—	0 9*	—	0 9	0 9†
S.A. Breweries	26 6	—	25 6*	—	—	—
S.A. Lands	3 10*	3 9*	3 9*	3 9*	3 10*	3 9*
S.A. Townships	—	—	—	9 0*	—	9 3*
South Van Ryns	3 0*	4 0	4 0*	4 3*	4 6*	4 6*
Springs Mines	30 3*	30 6	30 6*	31 9	33 0a	33 3
Sub-Nigels	11 9*	11 9*	11 9*	11 9*	11 9*	11 10½
Swaziland Tins	—	—	—	—	—	5 0*
Transvaal Lands	17 3*	—	—	—	—	—
Trans. G.M. Est.	—	—	—	7 6*	7 9*	8 0*
Transvaal Silvers.	25 3*	25 9	25 9*	26 0*	25 6	25 3
Do. Options	—	—	0 5*	—	—	—
Van Dyks	1 6*	—	1 5*	—	1 6	1 3*
Van Ryn Deeps	68 6*	69 0	69 0*	69 9	70 6	72 3
Village Deeps	6 6*	6 6*	6 6*	—	6 9*	—
West Rand Cons.	2 0*	—	—	2 0*	—	—
Western Rand Est.	3 0†	2 6*	2 6*	2 9*	3 0	3 0
West Springs	11 9*	11 9*	12 0*	12 0*	12 6	12 9
Do. Options	0 6†	0 6†	—	0 4†	0 3†	—
Witbank Colls.	44 0*	44 0*	43 0*	44 0*	44 0*	44 0*
Witwatersrands	—	11 0*	11 0*	11 6*	—	13 0
Wit. Deeps	6 3*	6 6*	6 6*	7 0*	7 6†	7 6†
Wolhuters	3 9*	—	3 9*	4 0†	3 10*	4 0*
Zaaiplaats Tins	2 6*	3 7*	2 9*	2 10*	—	2 10*
Union 5 per cent.	£97¼*	97⅝*	£98½*	£98*	£98¼	£98½*

Cam and Motor Plant.

The first return from the Cam and Motor reorganised plant has come to hand. In the first run, 8,300 tons were treated for a screen value of 44s., as against 35s. 6d., the latter figure being the valuation of the ore reserves. About 1,000 tons of concentrates were recovered at a value of £10 9s. 6d. per ton. Working costs are given at £11,900, sufficient to meet the cost of concentrates awaiting treatment, and the residue of the first tanks of concentrates treated gave a 90 per cent. extraction. The flotation plant is said to have been impeded by heavy rains.

Letters to the Editor.

REINFORCED CONCRETE vs. TIMBER.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—As a small measure of support to your laudable efforts in the cause of economy on the mines, may I offer a suggestion in favour of the more extended use of reinforced concrete in place of timber underground? This, every engineer knows, is the concrete age, and though for many years back concrete, both in the mass and reinforced, has been used in mines, it seems to me that there is still a wide field for its application in mining. Concrete lined shafts we have (the Bantjes, for instance, and some of our big collieries boast them), but why should not concrete be more largely used in place of shaft timbers? The case for concrete roof supports in stopes is even stronger, though it must be admitted that the arguments in favour of timber cannot easily be answered. The great feature of timber supports is, of course, that they give warning of the state of the hanging, and enable those in authority to take precautions in ample time against loss of life. Concrete supports, it is declared, fail in this important respect, and in cases where these are used it is often considered advisable to insert some timber supports to act as danger signals. But even if some timbering should be necessary for this reason, the case for the extended use of concrete is not affected, since it means a big reduction in the amount of timber required. What timber means in money does not seem to be generally appreciated on the Rand. In Wales, some of your readers may remember, pit props are counted and numbered; and retrieved where possible when they have done their work, for re-utilization. With the ever-increasing cost of timber, it may yet be necessary to do the same on the Rand. I admit there is the objection against concrete in shafts that in the event of an accident, timbers give, while concrete does not. That is, certainly, an argument against the use of concrete, but is it conclusive? Concrete, applied with a cement gun is playing an important part in ventilations schemes and splitting our air currents on the mines of the Far East. My point is that its use on the Rand is only in its infancy. Perhaps some of your readers would give their views on the subject?—Yours, etc.

"R. S."

19th April, 1921.

Concerning Mines and Men.

Mr. F. W. Girdler Brown is visiting the Rand.

* * *

Mr. Charles Dithelm, of Sultzer Brothers, of Winthur, Switzerland, has left on a business trip to Europe.

* * * *

Mr. A. D. Lewis has been appointed Director of Irrigation for the Union in place of Mr. F. E. Kantack, resigned.

* * * *

Mr. P. Ross Frames, Managing Director of the Premier D.M. Co., Ltd., has returned from a brief business trip to England.

* * * *

Mr. A. C. Holtby, of the engineering staff of the Consolidated Goldfields, has resigned his appointment and returned to England.

* * * *

Mr. Owen Letcher, editor of this journal, is leaving Johannesburg on Tuesday for Durban and the Natal Coal Fields in connection with the forthcoming big coal number of the S.A.M. and E.J.

* * * *

Mr. A. Mordey, of the well-known firm of consulting engineers known as Mordey & Dawbarn, is reporting on the tramway and lighting concessions of the Delagoa Bay Development Corporation, Ltd.

* * * *

Mr. A. J. Walton, Manager of the Crown Mines, is proceeding to Europe on leave. During Mr. Walton's absence the Crown Mines will be managed by Mr. J. E. Healey, from the Consolidated Main Reef. Mr. J. M. Thorp, who has returned from his trip to New Zealand, will act as general manager of the C.M.R. during Mr. Healey's absence.

* * * *

Recent visitors to the Wankie Colliery included M. Raymond Anthoine, an eminent Belgian geologist, and two mining engineers, Messrs. Dubois and Malycheff, who arrived there on the 8th inst. and spent two days examining the mine and the surface works, and also the geological features of the coalfield. These gentlemen expressed the greatest astonishment at finding an up-to-date plant and modern civilised conditions, in the heart of Africa, and were greatly impressed by their visit to Wankie. The party is on its way to Portuguese East Africa, on geological work in connection with coal discoveries in that part of the world. M. Anthoine expects to be in Portuguese East Africa for a period of two months, after which he leaves, via Beira, for the Eastern Belgian Congo.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

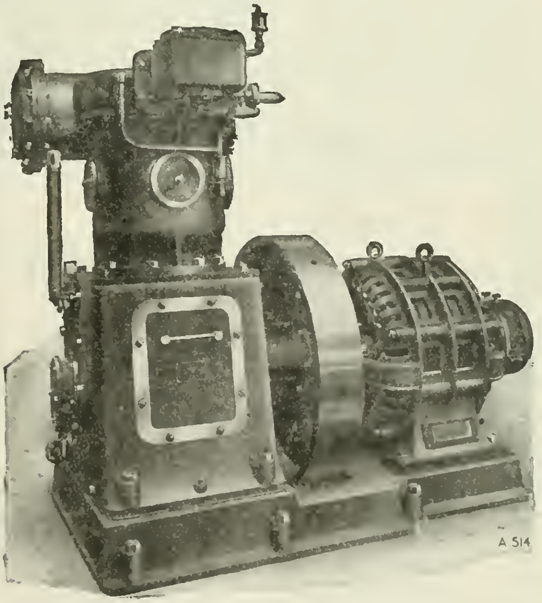
GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—FAILURE OF WOOL NEGOTIATIONS WITH GERMANY—PROPOSED REDUCED FREIGHT RATES—ELECTRICITY BILL—COAL—OILS AND CHEMICALS—METAL MARKET.

General Position.

There is a more optimistic feeling in commercial circles than has been experienced for some considerable time. The financial pressure is somewhat easier, and the discounting of paper in full on the other side, shows that money is getting more plentiful there. Although it is probable that a yet lower level of prices may be seen, this would mean, it is generally considered, a larger volume of business, and prove beneficial to merchants in enabling them to turn over their stocks. At the same time, consumers are not buying quantities; there seems to be the same hand-to-mouth buying policy, and it is hard to conceive how prices are to come down below present levels unless a further drop in wages occurs at Home. There is at the moment very little indeed being done on the Commercial Exchange. With regard to the Coal Strike in Britain, the news of the disruption of the "Triple Alliance" was very welcome, especially in view of the fact that previous cable information had keyed us up to an inevitable general strike. As is only natural, the miners are at present embittered at being left in the lurch by their co-partners, but it is generally hoped that after the present passions have cooled down they will see the futility under the circumstances of kicking against the pricks, and agree to negotiate terms for a satisfactory settlement. From the welter of the past three weeks' happenings one thing stands out very clearly, and that is the sound commonsense of the bulk of the British workmen, who have at the critical moment not hesitated to place the interests of the country above their own. At any rate, if any proof were needed that Bolshevism is not going to reign in Great Britain we have received it during the past week. As against the favourable news regarding the Coal Strike, Mr. Burton's Budget speech came to everybody here as a very disagreeable and unexpected surprise. One might indeed say that Johannesburg—in view of election pledges—was even as much staggered as the House of Assembly at Capetown itself, which incontinently adjourned the debate on the Budget speech for a week. The fact is, that after last year's satisfactory showing, we were not expecting to hear of a deficit for the year of nearly £250,000. With very few exceptions public criticism, both here and elsewhere, has been the reverse of kind on the increased Income Tax, postal, and other charges. Following hard on the heels of the general Budget came the news of the estimated deficit of £705,122 in the Railway Budget—altogether a bad week for the Union. This, of course, may temporarily destroy the hopes entertained of extensive railway and harbour extensions in the immediate future, which hopes were not unreasonably held in view of recent election speeches. A million or so spent on railways, harbours, and other reproductive works would have helped very considerably the present unemployment position and been of great assistance to merchants throughout the Union in selling their accumulated stocks. It is, however, thought probable that Mr. Jagger may have purposely exaggerated the position, possibly with a view to patting himself on the back when presenting his next Budget by showing a much better position than now forecasted.

Iron and Steel.

There is little change to report this week either as regards business or prices. Trading has been dull, as is only natural under the circumstances, people fighting shy on account of the uncertainty of the market and awaiting events; prices are, if anything, on the easy side. Latest quotations: Dunswart, 29s.; Union Steel Corporation, for small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d.; imported iron and steel, flats, smalls, 40s. to 50s.; larger sizes, 38s. 6d. to 55s.; ¼in. rounds, iron and steel, 69s. 6d.; 5-16in., 62s. 6d.; ⅜in., iron, 58s. 6d.; steel, 41s.; 7-16in., 44s.; ½in. and ⅝in. rounds, iron, 32s. 6d.; mild steel, 43s.; ¾in, iron and steel, 42s. 6d.; ⅞in. to 2in., iron rounds, 39s. 6d.; larger sizes, iron, 52s. 6d.; 1in. to 3in. mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅝in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d. to 47s. 6d.; shafting, 3-16in., 1s. 2d.; ⅜in., 1s. 1½d.; 7-16in.



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Engineering Shops.

These report a slight improvement in business and a better feeling abroad. The general complaint is that they are severely handicapped by reason of the action of the Railways and other Government bodies purchasing huge quantities of gun metal and thus raising the market against small contractors, which may be good for the mechanics but certainly not for the industry of the country. They further state that, in their opinion, the shipping companies and importing merchants appear to be working hand in glove in respect of the recent reductions in freight announced, which seem to affect more especially those articles which can be manufactured here.

Cyanide for outside mines is quoted at 1s. 6d. per lb.; zinc shavings, about 1s. per lb. There is but a small market for zinc outside the Witwatersrand, as outside mines have no machines for cutting.

A cable message from New York states that substantial reductions are announced in the products of the United States Steel Corporation.

It is understood that large concessions have been granted by the Chilian Government to Krupps, including 300,000 acres of land for the establishment of iron and steel foundries. It is further reported that Krupps are negotiating the purchase of important iron ore mines for £1,000,000.

Timber and Building Materials.

Business has been very quiet this week, and the tendency of prices, in the absence of inquiry, is to go lower. Deals and scantlings are about 1d. easier at 1s. 6½d.; floorings, about ½d at 9½d. to 10d.; ceilings, 7d. to 7½d.; beaver board, 5d.; Oregon, 6d. lower at 9s.; pitch pine, 10s. 6d. a cube; corrugated iron, 24 gauge, 10½d. to 1s. 0½d. Furniture Timber: Japanese oak, 1in. to 2in., 1s. 10d. to 1s. 11d. per square foot, 1s. 8d. to 1s. 9d. at the coast; Burmah teak, best quality, 21s. 6d. at the coast, seconds 20s. free on rail; American oak, 1in. up to 3in., 1s. 6½d. to 1s. 8½d. per superficial foot at the coast; American black walnut, 1in. up to 4in., 1s. 8d. per superficial foot free on rail Capetown; West African mahogany, 1in or thicker, 2s. 3d. per s. foot free on rail Durban; 3-ply ash, 5 m.m., 10½d. per square foot. Sheet glass, 16oz., British, from 65s. to 72s. Stock bricks are about 70s.; mixed bricks, 60s.; wire-cuts, £4 10s. to £5; and pressed bricks, £5 per 1,000 at yard. Blue lime is 4s. 3d.; white lime, 7s.; plaster, 5s. 3d.; cement, 11s. 6d. per bag. Damp course and roofing, 1 ply 40s., 2 ply 52s. 6d., 3 ply 65s.

The second-hand iron and timber yards report things as slack this week, but prices are unaltered, viz., 1s. 4d. for timber and 8d. for iron; casements, from 9s. to 25s.; doors, new, 35s. and upwards; mouldings, from 2½d.

The cabinet-makers' dispute at Capetown is still unsettled. The workers, it is stated, offered to accept a 48-hours week in full settlement of the dispute, but this was

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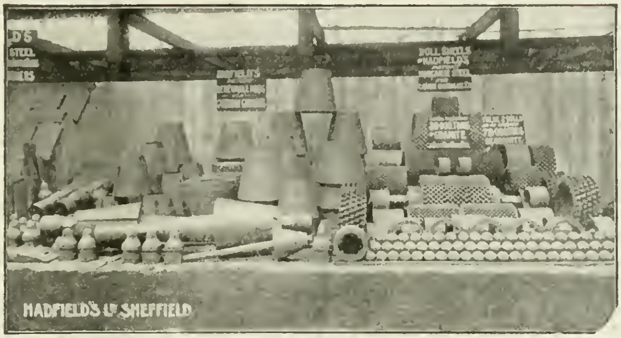

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Smith Street, Durban.

not accepted by the employers. This being the case it is quite likely, as the men are receiving considerable financial support from all parts of the country, that the strike may last a considerable time.

Building Operations in March.

The Municipal statistics for March show that 194 buildings were approved by the Council during last month, which, though a slight increase on the previous month, is distinctly lower than for the corresponding month of 1920, viz., 562.

Electrical Goods.

Owing to the present comparative inactivity in the building trade, electrical business still remains poor, the new country orders coming in being of little consequence. As an instance of their exiguity, during the month an important dealer has been sending such orders by post! Prices are about the same, but the tendency is for them to decline. A small consignment of half-watt lamps arrived this week, and were immediately sold. These were American "long-necks," and not suitable for this place, and would not have been disposed of but for the acute scarcity. Prices of Continental goods on the whole are about the same, but in some lines they are cheaper, and in all cases much below British quotations. Porcelain articles from the Continent are about 15 per cent cheaper than previous quotations, and glass shades are coming in freely.

Failure of Wool Negotiations with Germany.

The negotiations of Messrs. Chappel and Reynolds in Germany, which at first seemed to point to a successful issue, have, unfortunately, been of no effect. In their interview with the German industrial magnate, Mr. Hugo Stinnes, the latter referred to a quantity of railway wagons, costing about £400 each, which could be altered to suit South African requirements, which he could exchange, together with other railway material, such as locomotives, wagons or rails, for South African wool. Everything seemed to promise an early conclusion to a satisfactory deal; but eventually Mr. Stinnes intimated that the business could not be done. Negotiations in other quarters produced the same result. The delegates stated that the German Government's policy at present was not to allow imports or exports on a large scale, and Messrs. Chappel and Reynolds were forced to the opinion that the situation would not alter until the final settlement of the indemnity and reparation questions. The delegates said that in marked contrast to Britain, the workmen appeared to be keen on working not only the full time—eight hours a day but when opportunity offered to work overtime. They had come to the conclusion that the German Government is keeping the industrial development of the country back as far as possible in view of the pending settlement of the indemnities and that the mark is being kept at its present depreciated figure with that view, but that as soon as that question was satisfactorily settled the country will, in their opinion, quickly improve, notwithstanding the present great difficulties.

Proposed Reduced Freight Rates.

It is understood that the Conference Lines' proposed alteration of South African freight rates, which is to be submitted for consideration of merchants, will not take the form of a flat reduction, but will be on the basis of a reclassification of goods, automatically resulting in the reduction of the rates charged on articles at present in a higher classification. The present rebate offered in respect of Dutch competition will, it is expected, remain in force.

Electricity Bill.

Discussion on this is now to be transferred to Johannesburg. A number of delegates, representing the larger Municipalities concerned, have already left Capetown to confer with the Committee appointed to redraft the measure. It is recognised that the Bill as now drafted strikes at some important interests of Municipalities, hence the further conference here to protect those interests. It is generally thought that far-reaching amendments in the shape of safeguards will be introduced when the Bill is redrafted.

Coal.

It is stated that America during the first ten months of 1920 exported nearly eleven million tons of bituminous coal to Europe. At present good gas coal is selling at Baltimore f.o.b. at 25s. 6d., which is less than the wages presently paid to British miners, viz., 29s. 4d., which compares with 6s. 4d. per ton paid them in 1913. At the present moment it is stated that American coal can be imported at a price less than the British cost. Chinese coal is also being offered, which, although of good quality, is not cheap, and the delivery would take at least six weeks. The British Admiralty is asking quotations in Halifax for Newfoundland coal.

On the North-East Coast, as a result of the coal strike, very few blast furnaces are working, while the steelworks have closed down.

Chemicals and Dye Stuffs.

Chemicals.—It is stated that Germany at the Armistice had a chemical industry with a greater productive capacity than before the War. The British Mission—which was

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appointed to visit the chemical factories in the occupied parts of the Rhineland - reports that the technical work in the factories was not superior to that of English factories, the strength of the German industry lying in its organisation and the large scale of production owing to the financial support it received. The British chemical industry, says the Mission, should compete successfully with Germany provided reconstruction is undertaken on a sufficiently large scale.

Dye Stuffs. The Board of Trade announces that no former alien is allowed to acquire an interest in any company in the United Kingdom manufacturing synthetic dye stuffs or the working in intermediate products used in their manufacture

Dutch Exhibition for Union.

The Union's Fair in Holland has been such a success that, in view of fostering trade relations, it seems not at all unlikely that we shall have a Dutch Exhibition in South Africa early next year. The promoters of the idea are now busy securing financial support for the scheme. It is much to be hoped that the return visit may become an accomplished fact. In the meantime the bulk of the South African exhibits in Holland is being sent to Bristol for display, after which Glasgow will be visited.

The Diamond Market.

An improvement in the condition of the diamond market in the United States has been witnessed after a visit of Sir Ernest Oppenheimer to New York, who reaffirmed the policy of the London syndicate practically to guarantee the maintenance of diamond prices. It is reported that diamond interests in New York have decided to hold all cut and uncut stones for the market to improve. Sir Ernest Oppenheimer says the revival in the diamond trade mainly depends on how quickly business revives in America, but thinks the worst is over, and anticipates better times within the next six months.

Development of the Congo.

M. Francke, Minister of the Belgian Colonies, announces that the Budget will include 15 million francs as expenditure in equipping the Congo with public works, plant and material, which advance will be continued for ten years. This extraordinary advance is being made to secure a reduction in the transport rates and quicker conveyance. He stated that the exports from the Congo to Antwerp last year exceeded 200 million francs. Works for the more effective treatment of copper ore will be started in Katanga and Panda in June, one of which will cost at least 120 million francs.

Falling Prices in Britain.

The "Board of Trade Journal" reports an average decrease of 6.6 per cent. since February in the wholesale prices of 150 articles of food, and an average reduction of 22 per cent. in other articles. The heaviest falls are in textiles and iron and steel, especially pig iron.

The Johannesburg tramway receipts for March, 1921, were £59,057 13s. 10d., as compared with £46,114 1s. 3d. in the corresponding period of last year. The number of passengers carried last month was 4,480,173, and the car miles run 305,918, as against 4,379,985 and 371,617 in 1920.

Metal Market.

Latest quotations: Standard copper, £68 15s. cash, £68 17s. 6d. forward; electrolytic copper, £72 cash, £74 forward; Straits tin, £159 2s. cash, £162 7s. 6d. forward; English lead, £20 10s. cash, £21 2s. 6d. forward; bar silver, 34⅛d.; fine gold, 105s. 4d. per ounce.

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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Ninth Ordinary General Meeting of Shareholders in the Leeuwpoort (African Farms) Tin Mines, Ltd., will be held in the Board Room, The Jeppe Arcade, Commissioner Street, Johannesburg, **on Monday, 6th June, 1921, at 10.30 a.m.**, for the following business:-

(1) To receive and consider the Directors' and Auditors' Reports, the Balance Sheet, and Profit and Loss Account for the year ended 31st December, 1920.

(2) To elect two Directors in the places of Messrs. Julius Jeppe, C.B.E., and A. G. Gill, who retire in accordance with the Articles of Association, but are eligible and offer themselves for re-election.

(3) To appoint Auditors for the ensuing year and to fix remuneration for the last audit.

(4) To transact General Business.

The Share Transfer Books of the Company will be closed from 28th May to 6th June, 1921, both dates inclusive.

By Order of the Board of Directors,
A. WOODROW
(For the South African Townships, Mining and Finance Corporation, Ltd., Secretaries).

Head Office: The Jeppe Arcade,
Johannesburg, 2nd April, 1921.

THE

SOUTH AFRICAN LAND & EXPLORATION COMPANY, LIMITED.

(Incorporated in the Transvaal.)

Notice to Shareholders.

NOTICE IS HEREBY GIVEN that the Eighteenth Ordinary General Meeting of Shareholders in the abovenamed Company will be held at 38, Meischke's Building, Harrison Street, Johannesburg, on WEDNESDAY, the 18th MAY, 1921, at twelve noon, for the following purposes:—

1. To receive the Reports of the Directors and Auditors, together with the Balance Sheet as at 31st December, 1920.
2. To elect two Directors in the place of Mr. G. C. Fitzpatrick, O.B.E., and Sir T. M. Cullinan, who retire, but are eligible and offer themselves for re-election.
3. To elect Auditors for the ensuing year, and to fix the remuneration for the past audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 12th of May to the 1st of June, 1921, both days inclusive.

All proxies must be lodged not less than 24 hours prior to the time of Meeting.

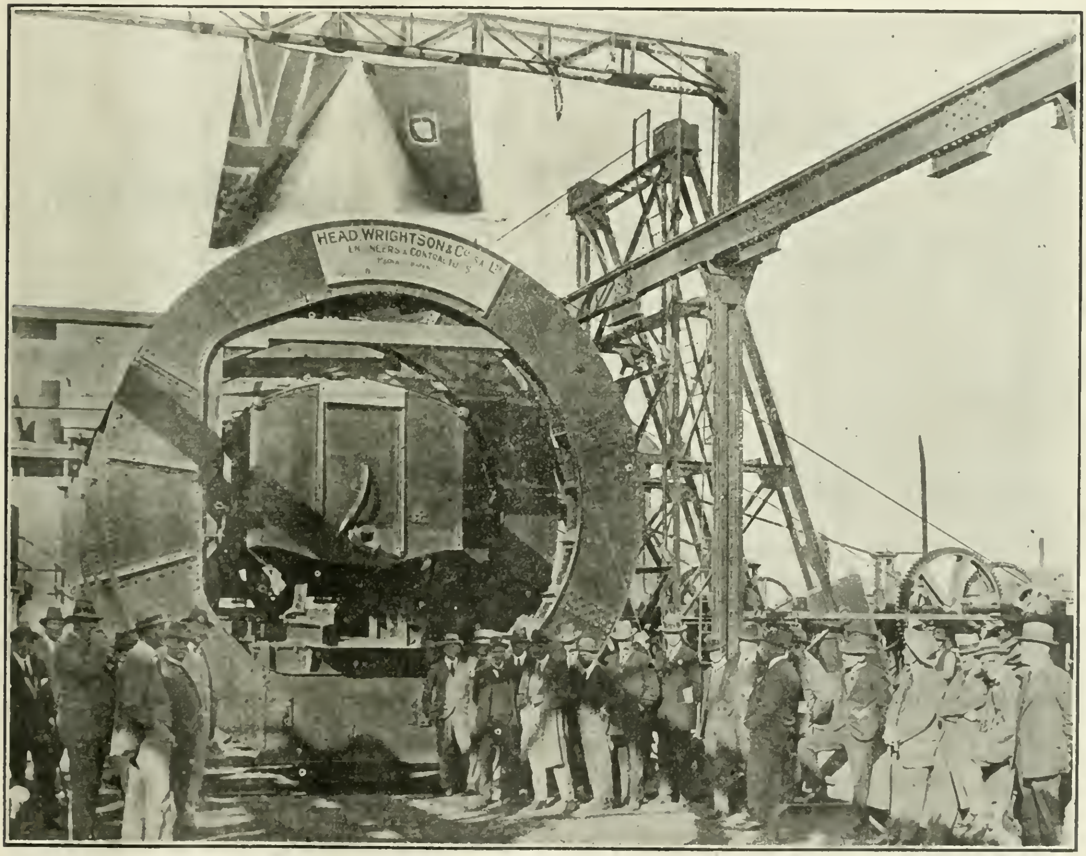
By Order of the Board,
E. MORGAN GEARD,
Acting Secretary.

Head Office: 38, Meischke's Building
(P.O. Box 2162),
Johannesburg.
2nd March, 1921.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXI., Part I JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 30, 1921. No. 1544.

The New Coal Truck Tippler for the Delagoa Bay Shipping Plant.



End View of the New Truck Tippler (Provay Patents) for Delagoa Bay, built by Messrs. Wright, Boag & Co., for the contractors, Messrs. Head, Wrightson & Co., Ltd. A full description appears in this issue. The view was taken at the trial run of the tippler this week, and in the picture will be seen, amongst others, the Director of the C.F.L.M., Capt. Andrade, Messrs. G. Provay, Ferreiro, John Roy, Boag, F. O. Stevenson, J. A. Vaughan, W. G. Wickham and H. Le May.

Photo by Watson.

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P.O. Box 7404 Johannesburg. Telephone 408 Central.

Telegrams: "SIEMENS."

CONGO DIAMONDS.

A NEW AND VITAL FACTOR IN THE WORLD'S DIAMOND TRADE.

HOW THOMAS F. RYAN HAS GAINED A GRIP OF THE KASAI GEM AREAS—A DIAMONDIFEROUS AREA 8,000 SQUARE MILES IN EXTENT—KING LEOPOLD'S PET PROJECT—PRESENT OUTPUT 250,000 CARATS PER ANNUM—AN EXTRAORDINARY STORY OF FINANCE & ADVENTURE.

In the following intensely interesting article the diamond fields of the Belgian Congo are described and some interesting light is thrown on the negotiations which King Leopold entered into with Thomas F. Ryan, one of the "big noises in America," and which resulted in the formation of the powerful Forminière Company.

The Kasai diamond fields are said to cover 8,000 square miles, and their output has already risen to 250,000 carats per annum. They can be very economically worked, and it is not improbable the exploitation of these extensive gem-bearing alluvials will have an important influence on the diamond industry of the Union.

Without fanfare of trumpets there has been born into the world during the past few years a concern which may profoundly affect the future of the South African diamond mining industry. It is, in fact, not an altogether unwarranted assumption that the matter in question has already had its influence on the gem market of the world and has played some part in the sudden recognition of the fact that diamonds are unsaleable and that the prevailing and universal depression compels the closing down of many properties and the curtailment of operations at many other mines.

South Africa's Ignorance of the Congo Fields.

We refer to recent discoveries in the Congo and Northern Angola. In several issues of this journal we have made reference to these new fields. But as so very little is known of them in this country, which is the leading diamond producing territory of the world, a further account of these Central African deposits will be of interest. Some little time ago we asked one of the foremost mining magnates of the Union—a gentleman who has a very large say indeed in the operations of our diamond mines and of the great selling syndicate—if he knew anything of these Congolese deposits, and his reply was: "Only what I have read of them in your paper." This remark serves to show that we live in water-tight compartments of ignorance in this continent.

In recent issues we have shown that the Forminière Company's output of diamonds from the Kasai area has risen to a quarter of a million carats per annum, and it is clear that there is ability greatly to increase this output.

The New Competitive Factor.

It is, in fact, not perhaps an unreasonable assumption that the Kasai diamond fields, in conjunction with the alluvial areas of the South-West African Protectorate, will in the future be able between them to produce an output which would not be very substantially less than that of the pipe and alluvial propositions.

And it is an interesting fact that both the Congo diamond fields and the Consolidated Diamond Mines of South-West Africa are largely controlled by American capital. We do not suggest from this that there is any combine between the interests operating in the two areas, but the facts that Thomas F. Ryan and the Morgan group are both interesting themselves in the diamondiferous areas which are best reached from the West Coast is at least interesting.

Congo Diamonds.—A Technical View.

Considerable reference is made in Dr. P. A. Wagner's well-known work on the "Diamond Fields of Southern Africa" (published in 1914) to the deposits in the Congo region, and the following references to these areas will be worthy of note.

Dr. P. A. Wagner, "Diamond Fields of Southern Africa" (1914), p. 102: "The kimberlite occurrences in the Katanga division of the Belgian Congo, of which the most important are shown in Fig. 29, may be conveniently divided into: (a) Eastern Kundelungu group; (b) Western Kundelungu group. (a) Described by Studt (F.E.) in report to Tanganyika Concessions, Ltd. On Kundelungu plateau, on foothills and on plains towards Lualaba River (3,200 ft. to over 5,000 ft.), red felspathic Kundelungu sandstone (? Pretoria series). The material occupying the Katanga pipes would appear, therefore, to be identical in every respect with the blue ground of the better-known South African occurrences situated about 1,200 miles to the south. Some of the pipes have been proved by test washings to be quite barren of diamonds; others are diamondiferous; but as previously signified, none of the occurrences appear to be worthy of exploitation. Up to the beginning of the current year (1914) 120 diamonds had been registered, the average weight being about ⅛ carat."

"(b) The Western Kundelungu pipes, twelve in number, which were discovered by Mr. M. Poulsen during 1913, are situated on the western side of the Kundelungu plateau, near its edge, at an elevation of from 4,000 to 5,000 ft." No mention of diamonds.

Page 334: "Belgian Congo. The principal diamond mining companies operating in the Belgian Congo are: I. The Tanganyika Concessions, Ltd., who are interested in equal parts with the Comité Spécial du Katanga in the Eastern Kundelungu group of pipes. At the present time the operations are principally confined to the Luanza pipe, which is being tested on an extensive scale. . . . Large numbers of very small diamonds are being found, but like the remaining members of the group the pipe appears to be unpayable. II. Société Belge Industrielle et Minière du Katanga, which owns the 12 pipes discovered by Mr. M. Poulsen. . . . No testing work has yet been carried out. . . . III. The Belgian-American Société Forestière et Minière du Congo, which, it will be recalled, is exploiting the alluvial deposits of the Kasai basin. The company sold its first shipment of 6,795 carats at Antwerp on January 10th (? 1914). The diamonds realised £8,160, or an average of 24s. 0·2d. per carat, which is stated on good authority to be somewhat below their true value."

Pages 288-9: "Alluvial diamonds have been proved to exist in three distinct parts of the Belgian Congo: I. In the eastern portion of the Katanga district, in the beds of some small streams draining the Kundelungu plateau. II. In the central portion of the Katanga district, in the bed of the Mutendele River. III. In the basin of the Kasai River, which forms the boundary between the Belgian Congo and Portuguese West Africa."

In further remarks on these three localities it is stated: "II. Between 1906 and 1912 a considerable amount of prospecting work was carried out by the Tanganyika Concessions, Ltd., in the valley and bed of the Mutendele River, a tributary of the Lualaba. . . . As all operations have been suspended, it is safe to infer that no profitable alluvium was located. III. The gravels of the Kasai region appear to be of some importance. They owe their discovery to an American prospector who in 1910 picked up several small diamonds in the bed of the Kiminina, a small tributary of the Kasai River. Extensive deposits were located and up to the present have yielded about 10,000 carats (1914). The diamonds are small and are said somewhat to resemble those found in G.S.-W.A."

America in the Congo.

A more up-to-date non-technical but intensely interesting account of these Congo diamond fields has recently been contributed to that wonderful paper, the *Saturday Evening Post*, of Philadelphia, by the much-travelled American journalist, Mr. Isaac F. Marcosson, who has recently been touring Africa and whose writings on the Union were commented on a few weeks ago.

Mr. Marcosson writes from an American standpoint. He sees the glory of the Stars and Stripes in every tangle of the Congo jungle. Nevertheless his articles are intensely interesting, and they throw a valuable light on Yankee influence in the Kasai basin. After explaining to us that the word " Forminière " is a name contraction of Société Internationale Forestière et Minière du Congo, he goes on to say:

Clearly to understand the scope and purpose of the Forminière you must know that it is one of the three master companies that have shaped the destiny of the Congo. I encountered the first—the Union Minière—the moment I entered the Katanga. The second is the Huileries du Congo Belge, the palm-oil producers whose bailiwick abuts upon the Congo and Kwilu rivers. I described their activities in the preceding article. Now we come to the third and the most important agency, so far as American interest is affected, in the Forminière, whose empire is the immense section watered by the Kasai River and which extends across the border into Angola. In the Union Minière you got the initial hint of America's part in the development of the Congo. That part, however, was entirely technical. With the Forminière you have the combination of American capital and American engineering in an achievement that is, to say the least, unusual.

King Leopold's Pet.

The moment I dipped into Congo business history I touched the Forminière for the reason that it was the pet project of King Leopold and the last and favourite corporate child of his economic statesmanship. Moreover, among the leading Belgian capitalists interested were men who had been Stanley's comrades and who had helped to blaze the path of civilisation through the wilds. King Albert spoke of it to me in terms of appreciation, and more especially of the American end. I felt a sense of pride in the financial courage and physical hardihood of my countrymen who had gone so far afield.

The King and the American Magnate.

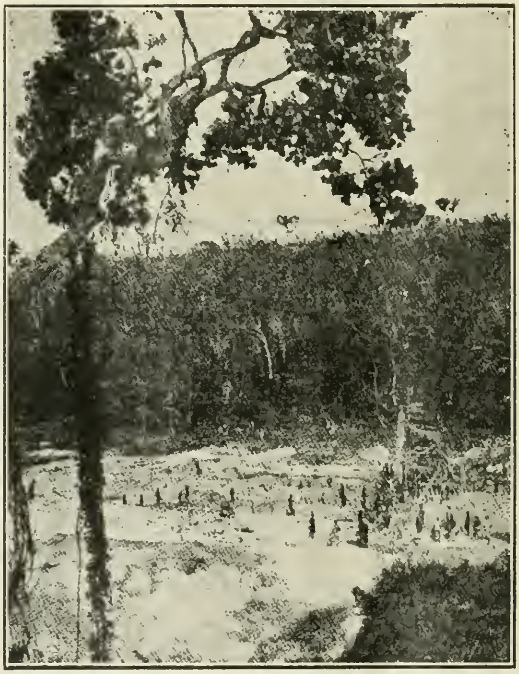
We can now go back to 1906, the year that was to mark the advent of America into the Congo, and in striking fashion. Leopold knew that the days of the Congo as a Free State were numbered. His personally conducted stewardship of the colony was being assailed by the socialists on one hand and the atrocity proclaimers on the other. Leopold was undoubtedly sincere in his desire to safeguard economically the African possession before it passed out of his control. In any event, during the summer of that year he sent a message to Ryan asking him to confer with him at Brussels. The summons came out of a clear sky, and at first the American financier paid no attention to it. He was then on a holiday in Switzerland. When a second came from the king he accepted, and in September there began a series of meetings between the two men which resulted in the organisation of the Forminière, and with it the dawn of a real international epoch in American enterprise.

In the light of our wealth, the timidity of American capital in actual constructive enterprise overseas is astonishing. Scrutinize the world business map and you see how shy it has been. We have rubber plantations in Sumatra, copper mines in Chile, gold interests in Ecuador, and have dabbled slightly in Russian and Siberian mining. These undertakings are slight, however, compared with the scope of the world field and our own wealth. Mexico, where we have extensive smelting, oil, rubber, mining and agricultural investments, is so close at hand that it scarcely seems like a foreign country. By a curious irony our capital there has suffered more than in any other part of the globe. Hence the spectacle of American pioneering in the Congo takes on a peculiar significance.

The Société Generale and the Forminière.

Long before the Forminière came into being the Société Générale was the chief financial factor in the Congo. With the exception of the Huileries du Congo Belge, which is British, it either dominates or has large holdings in every one of the sixteen other major corporations doing business in the colony, whose combined total capitalization is more than 200,000,000 francs. This means that it controls railway and river transport, and the cotton, gold rubber, ivory and diamond output.

The custodians of this financial power are the money kings of Belgium. Chief among them is Jean Jadot, Governor of the Société Générale—the institution still designates its head by this ancient title—and President of the Forminière. In him and his colleagues you find those elements of self-made success so dear to the heart of the human-interest historian. It would be difficult to find anywhere a more picturesque group of men than those who, through their association with King Leopold and the Société, have developed the Congo and so many other enterprises.



A Diamond Mine in the Heart of the Jungle.

Jadot, the Napoleon of Belgian Finance.

Jadot occupies to-day the same position in Belgium that the late J. P. Morgan held in his prime in America. He is the foremost capitalist. Across the broad, flat-topped desk of his office in that marble palace in the Rue Royale the tides of Belgian finance ebb and flow. Just as Morgan's name made an underwriting in New York, so does Jadot's put the stamp of authority on it in Brussels. Morgan inherited a great name and a fortune. Jadot made his name and his millions.

When you analyse the lives of American multimillionaires you find a curious repetition of history. Men like John D. Rockefeller, Henry H. Rogers, Thomas F. Ryan, and Russell Sage began as grocery clerks in small towns. Something in the atmosphere created by spice and sugar must have developed the money-making germ. With the plutocrats of Belgium it was different. Practically all of them, and especially those who have ruled the financial institutions, began as explorers or engineers. This shows the intimate connection that exists between Belgium and her overseas interests.

Ryan and the Congo.

President Cleveland was the first chief dignitary of a nation to recognise the Congo Free State in the 'eighties, and his name is perpetuated in Mount Cleveland, near the headwaters of the Congo River. An American Minister to Belgium, General H. S. Sanford, had a conspicuous part in all the first International African Associations formed by King Leopold to study the Congo situation. This contract, however, save Stanley's share was diplomatic and a passing phase. It was the prelude to the constructive and permanent part played by the American capitalists in the Forminière, chief of whom is Thomas F. Ryan.

A River Steamer on the Congo.

The reading world associates Ryan with the whirlpool of big finance. He ruled New York traction and he recast the tobacco world. Yet nothing appealed to his imagination and enthusiasm like the Congo. He saw it in very much the same way that Rhodes viewed Rhodesia. Every great American master of capital has had his particular pet. There is always some darling of the financial gods. The late J. P. Morgan, for example, regarded the United States Steel Corporation as his prize performance, and talked about it just as a doting father speaks of a successful son. The Union Pacific system was the apple of E. H. Harriman's eye, and the New York Central was a Vanderbilt fetish for decades. So with Ryan and the Congo. Other powerful Americans have become associated with him, as you will see later on, but it was the tall, clear-eyed Virginian who first had the vision on this side of the Atlantic and backed it with his millions. I am certain that if Ryan had gone into the Congo earlier, and had not been engrossed in his American interests, he would probably have done for the whole of Central Africa what Rhodes did for South Africa.

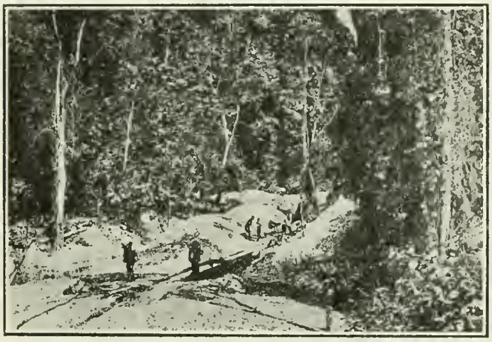
The Finding of the First Diamond.

You get some idea of the hazards that confronted the American pioneers when I say that when they set forth for the Kasai region, which is the south-western part of the Congo, late in 1907, they were accompanied by a battalion of native troops under Belgian officers. Often they had to fight their way before they could take specimens. As recently as 1915 one of the Forminière prospectors, E. G. Decker, was killed by the fierce Batshoks, the most belligerent of the Upper Kasai tribes. The Ball-Mohun group, which was the first of many, remained in the field more than three years and covered a wide area.

Up to this time gold was the only valuable mineral that had been discovered in the Congo, and the Americans naturally went after it. Much to their surprise they found diamonds, and thereby opened up a whole new source of wealth for the Colony. The first diamond was found at Mai Munene, which means Big Water, a considerable waterfall discovered by Livingstone. This region, which is watered by the Kasai River, became the centre of what is now known as the Congo diamond fields, and remains the stronghold of American engineering and enterprise in Central Africa. On a wooded height not far from the headwaters of the Kasai these path-finding Americans established a post called Tshikapa, the name of a small river near by.

A Vision of the Future.—Will History Repeat Itself?

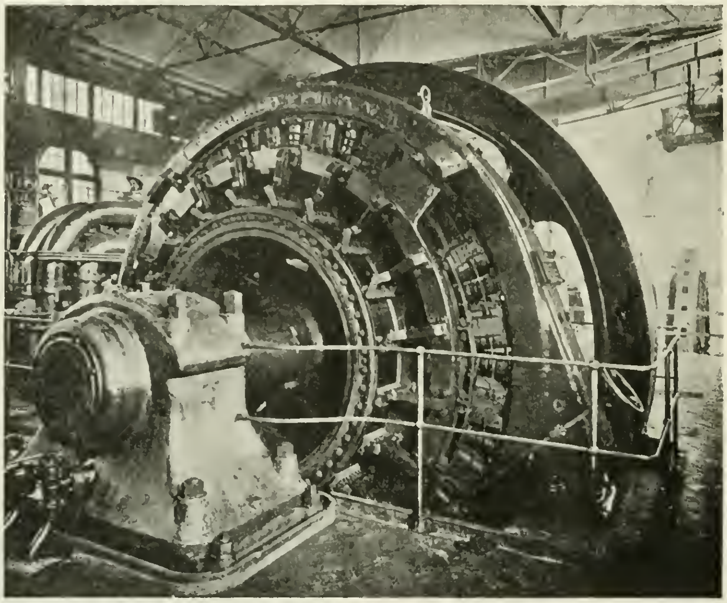
Now for a real human-interest detail. At Kimberley the Zulus and Kafirs know the value of the diamond, and there was formerly considerable and costly filching. All the workers are segregated in barbed-wire compounds and under constant surveillance. At the end of their period of service they are kept in custody for two weeks in order to make certain that they have not swallowed any stones. The Congo natives do not know what a diamond really is. The majority believe that it is simply a piece of glass employed in the making of bottles and there are a good many bottles of various kinds in the colony. Hence no watch is kept on the hundreds of Balubas who are mainly employed in the task of picking out the glittering jewels. During the past five years, when the product in the Congo fields had grown to 250,000 carats a year in small stones, not a single carat had been stolen. The same situation obtains in the Angola fields near by, where the output is one-half of this. As I looked at these mines with their thousands of grinning blacks, and heard the rattle of gravel in the shakers, my mind went back to Kimberley and the immense part that its treasure house played in shaping the economic destiny of South Africa. Long before the gold rush opened up the Rand the diamond mines had given the entire southern section of the continent a rebirth of prosperity. Will the Congo mines perform the same service for the Congo? In Angola the Forminière has created a replica of the Congo enterprise, the only difference being that it is under the Portuguese flag instead of the Belgian. Tshikapa has its double in Dundu, and Glenn H. Newport, who was with Decker when he was killed, is the managing engineer. The diamond mines are worked just like those in the Kasai region.



Prospecting in the heart of the Congo Jungle.

A Diamond Bearing Area 8,000 Square Miles in Extent.

The Congo mines are alluvial, and every creek and river bed is therefore a potential diamond mine. The only labour necessary is to remove the upper layer of earth in the creek beds, dig up the gravel, shake it out, and you have the concentrate from which a naked savage can pick the precious stones. They are precisely like the mines of German South-West Africa. So far no pipes have been discovered in the Kasai basin. One reason possibly is that this diamond-bearing area of nearly 8,000 square miles has scarcely been scraped by the prospector.



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The New Delagoa Bay Coaling Appliances.

SUCCESSFUL INITIAL TRIAL OF TRUCK TIPPLER—A REPRESENTATIVE GATHERING CONGRATULATES THE CONRTACTORS AND BUILDERS—HISTORY AND DETAILS OF THE SCHEME.

We are able this week to give an account of the successful trial run at Messrs. Wright, Boag's of the electrically driven Rotary Tippler of the Provay Patent Type, for the new coal shipping installation at Delagoa Bay, upon which all concerned are to be congratulated.

An interesting ceremony took place on Wednesday afternoon, the 27th inst., at Messrs. Wright, Boag & Co., Ltd.'s works in Troye Street, when the new car dumper or truck tippler, built on Provay's patents for the Port of Delagoa was successfully given on its initial run.

This construction was started in November last year and it reflects great credit on Rand engineers, engineering workshops and their mechanics. Calculations and drawings had to be made for the huge movable structure—no car-dumper of such size was ever built before in this country, and yet the complete machine is ready in less than six months, which was the contract time.

The diameter of the revolving structure is over 21 feet and its length about 45 feet. It can handle, that is, tip any size of trucks running on the South African Railways up to 50 tons capacity. The tippler was shown in operation containing a 40 ton capacity truck weighing 33,550 lbs.; and it operated smoothly and without hitch. The tippler, it will be remembered, represents the first stage of the new coal shipping installation for Delagoa Bay, designed to handle 800 tons per hour, which is expected to be in running order about August of this year.

History of the Scheme.

It may be recalled that to meet the demands for increased facilities for dealing with the export of coal from the port of Lourenço Marques, tenders were called for the supply and erection of a coaling plant of the capacity of 600 tons per hour. Owing to the difficulty in obtaining quick delivery of plant from abroad it was decided to consider tenders only from firms who could undertake to design and manufacture the plant in this country. Of the nine alternative arrangements put forward by Messrs. Head, Wrightson & Co (S.A.), Ltd., a plan embodying skips and providing for a coaling capacity of 800 tons per hour was accepted.

Details of the Scheme.

This scheme includes an electrically driven rotary Tippler of the Provay Patent Type, capable of tipping coal hopper wagons of 100,000 lbs. capacity or two "short" wagons. The Tippler delivers the coal from the trucks to a reinforced concrete bin to which four loading chutes are fitted, each of one skip capacity. Two inclined gantries lead from the Tippler Bin to two bunkers spaced 140 ft. apart on the quay. On each gantry a pair of automatic self-dumping skips will run, in balance, each pair being operated by an electric hoist. Each pair of skips is of 400 tons per hour capacity. The Bunkers are provided with chutes which deliver into a 40-ton and or an 8-ton loading bucket, the contents of which are lifted and discharged into the holds of the vessel by means of the existing 60-ton and 10-ton cranes. The design of the bunker chutes allows the 60-ton crane to pick up the loading bucket at any point within the slewing radius and deliver into either of the two forward or after hatches without longitudinal traversing of the crane, or movement of the ship.

Advantages of the Skip Scheme.

Messrs. Head, Wrightson & Co. (S.A.), Ltd., claimed the following advantages for the skip scheme:

1. Cost of upkeep negligible.
2. The plant can be simply and safely controlled.
3. With the exception of the motors, the whole of the plant can be quickly manufactured in this country.

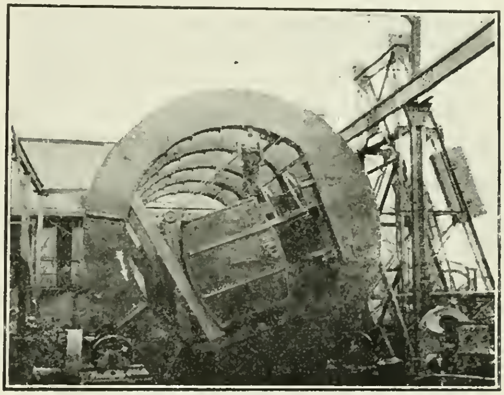
The Port and Railway Council unhesitatingly accepted the tender for this scheme, both on technical and general grounds as the skip system coincides with the intermittent working of the cranes, rather than a conveyor system with its innumerable working parts and heavy cost of upkeep. The scheme adopted is not a novelty in the way of coaling plants, as, included in their many plants in various parts of the world, Messrs. Head, Wrightson & Co. have installed a rapid skip coal loading plant, in two units of 500 tons per hour, at Miike Harbour, Japan. The skip system of rapid winding and dealing with large tonnages is well known on the Rand, at Kimberley and other districts.

The Work of Manufacture.

The major portion of the work of manufacture was entrusted to Messrs. Wright, Boag & Co., Ltd., of Johannesburg, but other engineering firms here and at Delagoa Bay have helped. The designing and all detailed working drawings were prepared by H. W. & Co., this department being in the hands of Mr. E. G. Dowse, of Johannesburg, for many years connected with Messrs. Head, Wrightson & Co., England. This includes the designs for the reinforced concrete Tippler-Bin, foundations and other reinforced concrete work.

An Interesting Function.

After the inspection of the plant, a pleasing little function was held in Messrs. Wright, Boag & Co.'s offices, when Messrs. Head, Wrightson & Co., Ltd., entertained the visitors. Mr. John Roy wished success to the new plant, and expressed the hope that the coal would be delivered to the holds without undue breakage. Captain Andrade, the Engineer Director of the C.F.L.M., replied, and voiced the thanks of the C.F.L.M. Administration. Mr. F. O. Stevenson, on behalf of the contractors, declared that the success of the work was due to the hearty co-operation of all concerned, the builders, Messrs. Wright, Boag & Co., Ltd., and Mr. E. G. Dowse, who had prepared the working drawings, and of Mr. Provay, of the C.F.L.M.. Mr. Stevenson added that the work could not have been done better in any European engineering works. Mr. Boag and Mr. E. G. Dowse suitably replied, and Mr. J. A. Vaughan (a member of the Coal Commission) expressed confidence that in such excellent hands, the plant could not fail to prove successful. This concluded a most interesting function, which marked the successful completion of the first stage of the new coaling appliances for Delagoa Bay.



TIPPLER IN OPERATION, SHOWING TRUCK IN COURSE OF BEING EMPTIED.

There were present at the test the Portuguese Consul-General, Mr. d'Alpoin, the Vice-Consul, Mr. Ferreiro, the Consul-General for Italy, Mr. Labbia, the Director of the Port, Captain Andrade, the Electrical Engineer of the Port, Mr. Provay (who is the Patentee of the machine), Mr. Frank O. Stevenson, representing the Contractors, Messrs. Head, Wrightson & Co. (S.A.), Ltd., and Messrs. Boag, Mackay and Massey of the builder's firm. Others present included Messrs. John Roy, Gordon Sandilands, Elsdon Dew, H. Le May, Gray, J. A. Vaughan, Braidwood, G. M. Clark, E. J. Laschinger, W. G. Wickam, E. M. Hind, Chapman, Beatty, Kleudgeon and J. A. Harris, of the S.A.R.

The Future of the Far West Rand.

"PULLINGER" PROSPECTS—A NEW FLOTATION TO EXPLOIT THE EXTENSION OF THE MAIN REEF.

Recent remarks in this journal regarding the working of the property of the West Rand Estates or "Pullinger" property, as it is more popularly termed, have led to a revival of interest in that neighbourhood. It is believed that the visit of Mr. J. Waldie Pierson to England at this juncture is in connection with the property, since it is noteworthy that his visit synchronises with a revival of interest in the shares of the Company.

A New West Rand Enterprise.

Last year the Western Rand Gold and Land Co., Ltd., was registered in the Transvaal, and 55 shares of £30 each have been issued with £20 paid up. The company acquired a three years' option with right of renewal over the mineral rights of the farm Driefontein 591, which is some 3,660 acres in extent and situated due west of the Western Rand Estates Company ("Pullingers"). Only one farm—Driefontein 614—divides the two properties and this farm is also held under option by a syndicate of ten members. Very large sums have been expended in prospecting for the Main Reef on the extension of "Pullingers," but there is a piece of ground some four miles wide immediately to the west of "Pullingers," and embracing the above two farms, that has never been prospected. The late J. S. Curtis, the well-known mining expert, reported that undoubtedly the Main Reef series runs through these two farms and his plan shows the line of the sub-outcrop of this series.

There is no doubt that high grade reefs have been proved to run through "Pullingers," and the core shows visible gold. It may be mentioned that the results from No. 9 borehole, which is close to the boundary of Driefontein, are among the best obtained on the Western Rand Estates, which fact, of course, gives great encouragement to the option-holders of the latter.

This new venture appears to have great possibilities and the ground should be tested by boring. The directors are R. T. Mathison, chairman of the Stock Exchange, and J. Mackenzie, of H. J. Hofmeyr, solicitor, and we wish the directors and shareholders the best of luck. It is not outside the bounds of possibility that we may yet see the Far West competing with the Far East Rand in popular interest and favour.

Lebaudy's Langlaagte Proprietary.

The dormant outcrop mine belonging to the estate of the late Jaques Lebaudy has lately been reported upon by an American engineer who came out from New York for the purpose. On receipt of his report, it is understood that the executors will decide whether to work the mine or sell it to one of the neighbouring companies, the Crown Mines or the Langlaagte Estate.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES vs. BAR FRAMES."

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Coal Commission's Report: Official Summary.

GRADING AND POOLING RECOMMENDED—GRADING COMMITTEES TO BE ESTABLISHED—SPONTANEOUS COMBUSTION TO BE COMBATED.

With commendable promptitude, the Department of Mines and Industries has issued the following summary of the report of the Coal Commission. Its main features, it will be seen, are the recommendations regarding grading and pooling. The treatment of the subject of spontaneous combustion is disappointingly abbreviated, but we are promised a detailed memorandum dealing with it later.

The following summary of the report of the Coal Commission recently appointed by the Government to inquire into the question of the grading and pooling of South African coal for export and bunkering and other matters connected with the trade has been furnished by the Department of Mines and Industries:

Grading.

(1) (a) The grading of coal for export and for bunkers will enhance the reputation and value of African coal and be of benefit to the industry.

(b) One or more grading committees should be established to classify coals into their respective grades, to have an efficient staff for inspecting, sampling and determining the value of coals, to issue certificates for coal, and to have power to prohibit the export of coal which is dangerous to life or property owing to its liability of spontaneous ignition.

(c) The cost of grading should be borne by the collieries in proportion to the tonnage shipped by each.

Pooling.

(2) (a) The present method of handling the Natal shipment coal at the port is not in the best interests of collieries, the oversea buyer, the shipowner and the railways and harbours.

(b) A pooling system would result in an improvement and would be beneficial to the coal industry in several other respects, such as the stabilisation of prices, greater regularity of output and greater efficiency of labour at collieries.

(c) Any scheme of enforced pooling would be detrimental to the coal industry, but this is not the case with voluntary pooling which is desirable in the interests of all concerned.

(d) When adequate facilities are available for off-loading trucks and for the storage of coal, the railway administration would be justified in levying demurrage on trucks at all the ports.

(e) It is desirable that the collieries outside the present Transvaal Coal Owners' Association who undertake the shipment business should either be linked up with the present association or form themselves into a separate association.

Spontaneous Combustion.

Discouragement of the export of low-grade coal: spontaneous combustion.

(3) (a) The grading of coal as recommended will be sufficient discouragement against exporting low grade coals.

(b) The coal which is so liable to spontaneous combustion as to endanger life and property should not be exported.

(c) Certain practical steps can be taken to diminish liability to spontaneous combustion.

Internal Consumption.

Safeguarding the supply of coal for internal consumption:

(a) The Railway Administration, in the event of its not securing sufficient or satisfactory tenders for the supply of coal for its purpose, should have a compulsory call upon a portion of each colliery's output, the question of price to be determined by arbitration.

(b) The present practice of the railways to intercept coal in emergencies for its immediate requirements should be continued, subject to certain safeguards.

(c) Increased storage accommodation should be provided in Natal for reserves of locomotive coal at engine depots.

(d) If a shortage of coal supplies for local industries and municipalities should arise the Government should have the right to intervene by prohibiting or curtailing the shipment of coal until the shortage has been relieved.

The report was accompanied by a short draft Bill giving effect to the findings of the Commission, which, it is understood, will be introduced into Parliament at an early date.

The report, which is unanimous, is signed by all the members of the Commission, which include Sir Robert Kotzé (chairman), Messrs. J. E. Vaughan, J. A. Vaughan, J. W. Carr, J. A. Harris, John Roy, J. T. Williams and Robert Mackenzie.

The report of the Commission is accompanied by an exhaustive memorandum on the spontaneous combustion of coal by Mr. J. A. Vaughan, of the Department of Mines and Industries.

THE LONELY'S OUTPUT.

The following are particulars of gold, etc., from the Lonely mine for the month of March, 1921: Mill ran 213 hours; crushed 1,690 tons; fine gold recovered, 565·879 ozs.; value, £2,379 3s. 4d.; slimes treated 1,690 tons; fine gold recovered, 1,103.599 oz.; value, £4,640 11s 2d.; total fine gold, 1,669·478 ozs.; total value at 84s., £7,019 14s. 6d.; loss, £1,013 4s. 2d. The loss was, of course, occasioned by the recent strike of employees which occurred on Rhodesian mining properties.

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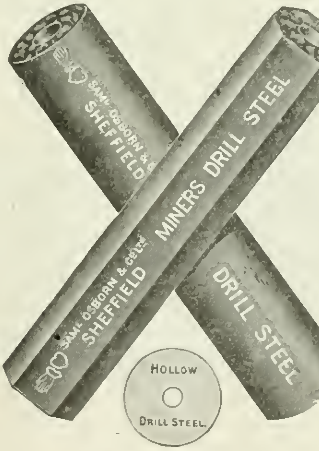
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The Year with Rand Mines Limited.

PROFITS SLIGHTLY INCREASED—DIRECTORS' REVIEW OF CONDITIONS—LIST OF SHAREHOLDINGS.

The omission of the usual summary of the reports and accounts of its subsidiaries makes the annual report of the Rand Mines, Ltd., a much briefer document than that of former years. Nevertheless, in addition to its references to the profits and revenue for the year, it contains an interesting authoritative review of the conditions prevailing in the mining industry of the Rand during the year.

Inter alia, the directors state: "the price received for gold by the mining industry during the past year was on the average slightly higher than that obtained during the latter part of the previous year, but as the improved price was obtained for the whole year's output compared with half the year's output in 1919, the excess amount received above the standard price of gold was more than double that obtained in the previous year. On the other hand, working costs during 1920 showed a further increase. The final results comparing 1920 with 1919 show that most of the gold mining companies in which we are interested obtained substantially higher profits. This is reflected in the dividends received by your company from its holdings in these companies, the amount of £764,983 obtained from the source comparing favourably with £520,382 in 1919. The price of gold is governed by rates of exchange between New York and London, in which there were many fluctuations last year.

Effect of Lower Premium.

Since the close of 1920 the improvement in the American exchange has been followed by a fall in the price of gold, and the average price obtained is now about £5 7s. per fine ounce. Owing to high working costs this figure yields but a slender margin of profit to many low grade companies. Thus many mines which enjoyed in 1920 an illusory prosperity are faced with an uncertain and difficult period, which will continue to be more or less critical as the price of gold fluctuates. It is, however, satisfactory to note that commodity prices the world over appear to have touched their highest point, and lower costs for essential mining stores may be looked for in the near future. In the same way the cost of living is also falling in South Africa as in other countries, and a readjustment of wages, increased to meet the very high cost of living, may ultimately be expected, in common with similar adjustments under parallel conditions in other parts of the world. The effect of these two factors, especially on the lower grade mines, is of vital importance. It must be pointed out that, despite lower commodity prices, considerable stocks of stores and materials have to be absorbed before the full benefit of lower prices will be felt.

Native Labour.

Native labour has shown during the year the usual seasonal fluctuation. The total number of native employees on mines of the Group rose to its highest point, viz.: 80,5[illegible] labourers, in June, and at close of the year was 76,755, compared with 69,200 at the end of 1919. The health of native employees of the Group continues to receive most careful attention, but the total mortality over the year showed a slight increase (from 8.40 per 1,000 to 9.46), due partly to the recrudescence of influenza and partly to the poor physique of many of the labourers from districts where food supplies were short. The Low Grade Mines Commission published its final report during the year. Their final recommendations were virtually confined to ways and means of reducing operating costs, and were directed chiefly to the improvement of efficiency by reorganisation in methods of underground work; the provision of joint councils for obviating disputes between employers and employees; the increase of the native labour supply by the introduction of labour from tropical areas and to the modification of the existing mining regulations. This last recommendation was dealt with by the Chamber of Mines and the Trades Unions affected and a modification agreed upon, but when put by the Unions to their members was unfortunately not agreed to. As regards the other important recommendations of the Commission, nothing has yet been done by the Government. Compared with the unsettled state of affairs prevailing in most parts of the world, the gold mining industry has not been seriously disturbed by labour disputes during the year, although there has been a number of vexatious sectional strikes, practically all of which were in violation of the agreements between the Chamber of Mines and the various Unions. In February, 1920, the natives of several mines followed the example of the white employees and struck for more pay; their demands were, however, not agreed to, and they returned to work after a few days. As usual, a plan of the Witwatersrand properties in which this company is interested, is attached to the report.

ACCOUNTS.

The profit for the year, £863,006 5s. 5d., shows an increase of £16,437 16s. 2d., as compared with the previous year, which is accounted for by a decrease in profits on investments sold of £271,592 13s. 1d., and an increase of £288,030 9s. 3d. in ordinary profits, including dividends on shareholdings. The above-mentioned profit of £863,006 5s. 5d. has been carried to the credit of Appropriation Account, together with £658 3s. 7d. in respect of forfeited dividends, which, with £865,821 18s., the balance unappropriated at the commencement of the year, makes a total of £1,729,486 7s. From this sum Dividends Nos. 34 and 35 were paid, absorbing £770,673 3s. 9d., and an amount of £331,047 2s. 5d. was appropriated for new investments made during the year in excess of book value received on realisation of investments, leaving a balance unappropriated at 31st December, 1920, of £627,766 0s. 10d., which is represented in the Balance Sheet by cash and cash assets less liabilities. The policy adopted by the company in writing down the value of its shareholdings to the market value in the cases where the book value exceeded the market price has been continued; the sum thus written off amounts to £519,022 5s. 9d. In addition to this sum £42,576 3s. 10d. has been written off claims and water rights account in respect of claims abandoned during the year. These amounts have been written off Reserve Fund and are reflected in the Balance Sheet submitted. The amount of the Reserve Fund now stands at £2,344,193 11s. 3d. The book value of the various shares and debentures held by your company stands at £2,745,125 2s. 9d., which is considerably below the market value thereof.

During the year under review the Rand Mines acquired shareholdings in certain industrial concerns, namely: Pretoria Iron Mines, Limited, South African Iron and Steel Corporation, Limited, and the Hume Pipe Company (South Africa), Limited. The company also purchased 50,820 shares in the Anglo American Corporation, Limited.

List of Shareholdings.

The following is the list of the Rand Mines holdings of shares and debentures, at or below market value:—Shares of £5: 29,275 Robinson Gold Mining Company, Ltd. Shares of £1: 50,820 Anglo-American Corporation, Ltd., 70,244 Bantjes Consolidated Mines, Ltd., 13,350 Brakpan Mines, Ltd., 175,663 City Deep, Ltd., 4,780 Consolidated M.R. Mines and Estates, Ltd., 1,534 Daggafontein Mines, Ltd., 127,017 Durban Roodepoort Deep, Ltd., 18,847 East Rand Proprietary Mines, Ltd., 365,268, Ferreira Deep, Ltd. 2,498 Geduld Proprietary Mines, Ltd., 71 Geduld Proprietary Mines, Ltd., Options, 282,493 Geldenhuis Deep, Ltd., 114,300 General Estates, Ltd., 86,073 Jupiter Gold Mining Co., Ltd., 83,351 Modderfontein East, Ltd., 5,414 Modder-Modderfontein G.M. Co., Ltd., 364,092 Nourse Mines. fontein East, Ltd. (4 year Options), 204,999 New Ltd., 4,475 Pretoria Iron Mines, Limited, 7,345 Pretoria Portland Cement Co., Ltd., 126,222 Robinson Deep, Ltd., "B" shares, 266,724 Rose Deep, Ltd., 18,780 South African Iron and Steel Corporation, Ltd., 7,205 Springs Mines, Ltd., 25,000 The Hume Pipe Co. (S.A.), Ltd., 15,347 The Village Main Reef G.M. Co., Ltd., 19,520 Turffontein Estate, Ltd. (in liquidation), 105,226 Village Deep, Ltd., 581 West Springs, Ltd., fully paid, 112,500 West Springs, Ltd., (8s. per share paid), 19,667 Witbank Colliery, Ltd., 14,120 Wolhuter Gold Mines, Ltd. Shares of 10s.: 778,605 Crown Mines, Ltd. Shares of 5s.: 211,592 Modderfontein B. Gold Mines, Ltd., 16,304 Modderfontein Deep Levels, Ltd.

Modder "B": A Year's Results.

SEVERAL FACTORS CONTRIBUTE TO INCREASED COSTS—"PREMIUM" AUGMENTS PROFITS—DEVELOPMENT OF THE DEEPER WORKINGS.

The following extracts from the annual report of the directors and consulting engineer of the Modder "B" reflect the mining and financial position of the company as at the beginning of the current year.

The annual report of the directors of the Modder B. shows that the tonnage milled and yield per ton, when compared with the preceding year, show a small decrease. Working costs, on the other hand, are considerably higher, for reasons stated in the report of the consulting engineer. These adverse factors, however, have been more than counterbalanced by the price received for gold produced being above standard rates, and the working profit for the year consequently shows an increase of £71,766.

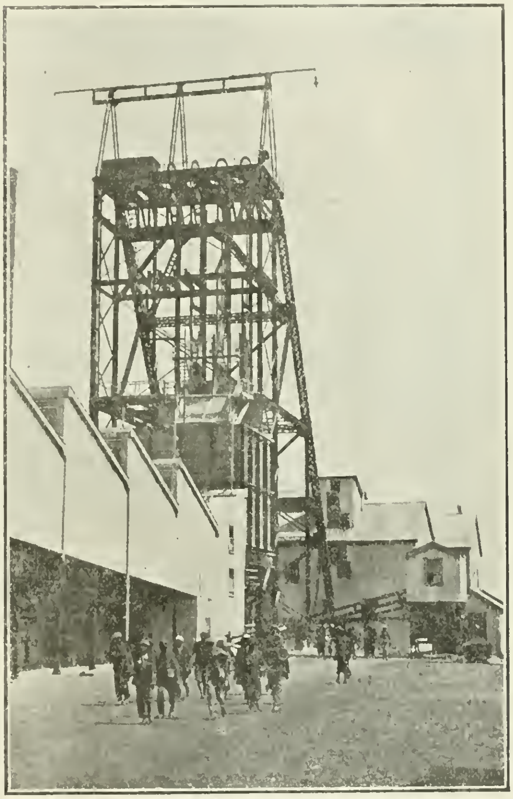
The bulk of the payable ore developed during the year was again located in the south-western section of the property. Development operations in the eastern section, which is much disturbed by faults and dykes, have been mainly of an exploratory nature, and where the reef has been exposed, values on the whole have been low.

The two new deep level shafts will be placed in commission during the current year and will accelerate the development and assist the working of the deeper portion of the mine.

The balance of the working expenditure and revenue account for the year shows a net profit of £917,915 3s. 10d. This amount, together with the balance of £233,704 4s. 7d. unappropriated at the commencement of the year and £912 6s. 3d. in respect of forfeited dividends, making a total of £1,152,531 14s. 8d., has been dealt with as follows: Capital expenditure, £144,814; Government and Provincial taxes, £135,314; dividends Nos. 16 and 17, £577,500. The balance unappropriated at 31st December, 1920, represented by cash, investments and cash assets, less liabilities, is £294,902. The expenditure incurred on sinking and equipping the two new shafts and other work on hand has exceeded the estimates originally framed, owing to substantial increases in the cost of wages and stores. It was also found necessary during the year to provide further housing accommodation for employees, and to safeguard an adequate supply of water for the company by means of a pipe-line from the shafts of the Modderfontein East, Ltd. To complete the present programme for 1921, which includes the sinking of the south-western shaft to its final depth, the permanent equipment of this shaft under steam for hoisting purposes, and its connection by surface haulage with the reduction plant, as well as the equipment of the south-eastern shaft for development purposes, will entail an estimated further expenditure of £166,351 during the current year, towards which a sum of about £100,000 should be available from the present cash and cash assets on hand. No provision is made in this estimate for a possible concentration of pumping operations at one or other of the two new shafts, or the electrification of winding engines at these shafts.

Mr. Stuart Martin's Report.

In the course of his report the consulting engineer, Mr. Stuart Martin, writes: The following figures compare the leading features of the last two years' operations: Tonnage milled, 1919 649,500, 1920 627,700; yield per ton milled, 1919 10·344 dwts., 1920 9·918 dwts.; revenue per ton milled, 1919 48s. 6d., 1920 55s. 4d.; cost per ton milled, 1919 22s. 5d., 1920 26s. 1d.; working profit per ton milled, 1919 26s. 1d., 1920 29s. 3d.; total working profit, 1919 £846,657, 1920 £918,423; total development footage, 1919 20,004, 1920 17,401; ore reserves, 1919 3,215,100 tons, 1920 3,006,600 tons; ore reserve value, 1919 9·0 dwts., 1920 8·6 dwts. The working profit of £918,423 shows an improvement of £71,766 due to the enhanced selling price of gold. Costs have increased owing to several factors; the tonnage milled shows a decrease of 21,800 tons, due chiefly to the loss of time in February on account of the strike of native labour and the unsatisfactory supply of compressed air in the first half of the year before the erection of the additional plant. Furthermore, the total expenditure has risen materially under the heads of white wages and stores. White wages per month which in 1919 averaged £36 per man rose in 1920 to £45 per man, equivalent to an additional sum of £38,000 for the year. Expenditure on stores was higher by £16,347, and substantial increases are also recorded in such items as phthisis fund, leave pay, etc. With falling prices of stores some relief may be expected during the current year. The native labour supply has been good throughout the period under review. Development operations were slightly curtailed for a portion of the year due to the above-mentioned shortage of compressed air; also, a considerable proportion was in the nature of secondary development in the south-western section of the mine. This, whilst confirming the good values disclosed in primary development, did not add to the ore reserves, and the tonnage developed for the year amounted to 405,200



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tons of 8·5 dwts. value. In the north-eastern section of the mine a relatively small amount of development was done owing to the disturbed nature of the country. The ore reserve has been re-estimated and re-valued at 31st December, 1920, as follows: 3,006,600 tons value 8·6 dwts. over a stoping width of 64 inches. Compared with last year this shows a fall of 208,500 tons, and a decrease in the average value of 0·4 dwt.; the average stoping width is greater by one inch. The south-east shaft was sunk to its final depth of 1,743 feet. Reef of narrow width and low grade was intersected at a depth of 1,496 feet in disturbed ground. Work in the nature of ore passes, bins and cross-cuts to the reef is being done in the neighbourhood of this shaft-bottom, preparatory to the development of reef, particularly in an eastward direction in order to connect with the promising ore body indicated by the Geduld raise. The new south-west shaft was started in February, and at the close of the year had been sunk 1,180 feet; it is estimated that the reef will be intersected at a depth of approximately 1,590 feet. This shaft will have to be sunk to a final depth of about 1,800 feet in order that it may command the remaining undeveloped area of the south-western portion of the property to the southern boundary. The collar of shaft, permanent headgear, boilers and winding plant are erected. The surface haulage linking up the shaft with the reduction plant, and the sinking and equipment will be completed during the current year, which will enable winding of ore to take place towards the end of that period. The development and the mining of ore from the deeper workings on the west side will be materially facilitated when the new shaft is fully equipped for rock hoisting. Capital expenditure for the year was heavy, viz., £163,020, due chiefly to the concurrent sinking of two deep level shafts; £57,502 was spent on shaft sinking and equipping the south-east shaft, and £77,964 on sinking and equipping the south-west shaft. Owing to the quantity of water from the Geduld mine having decreased materially, and the rainfall being only moderate, it was impossible to obtain the full supply as heretofore from the usual source, viz., the President dam, and a sum of £15,215 was spent on assuring the necessary supply by taking surplus water from the Modderfontein East mine. The balance of the capital expenditure was spent on additions to the native hospital and housing of employees, etc. Commitments on capital account for the current year are estimated at £166,351. This sum covers sinking the south-western shaft to its final depth, its equipment with ore bins both on the surface and underground and its connection to the reduction plant 5,000 feet distant by a surface haulage. The south-eastern shaft equipment will be sufficient to carry on development operations. Apart from the above the estimates provide for additions to the married quarters, change houses and offices at the new shafts, and extensions to the native compound. I have pleasure in recording the energetic and loyal work of the manager and his staff.

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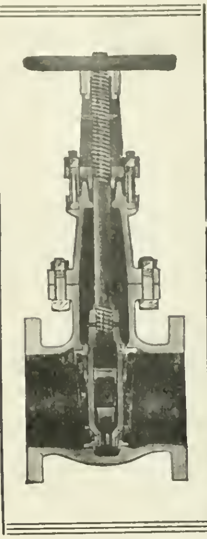
Penrol Motor Fuel, Ltd.—An improvement in alcohol acetylene fuels for internal combustion engines.

Sidney Sherrard Osborn.—A continuous amalgamating table, with device for cleaning, scraping and dressing same.



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The "Mining Journal's" Essay Competition.

A PRIZE OF £25 OFFERED—REDUCTION OF COSTS AND IMPROVEMENT OF EFFICIENCY—WANTED GOOD IDEAS BRIEFLY EXPRESSED.

> It is indisputable that a substantial improvement in the position of Witwatersrand mining is absolutely imperative not only in the interests of the Reef and of Johannesburg, but in the interests of the whole country.
>
> And such an improvement must be founded on a more lasting and stable basis than the mere incidence of the gold premium which, for the present at any rate, is based on the depreciated value of the British pound, a fickle and ephemeral factor which is an unsound basis for any industry. Have you, Mr. Reader, any useful ideas as to how the industry can be helped? If you have any such views send them along. We are prepared to pay for them.

The enduring improvement which our mines require can only be obtained through the media of better efficiency and lower working costs and with a view to eliciting constructive views on these supremely vital subjects the *South African Mining and Engineering Journal* offers a prize of £25 for the best essay on the subject of "How to Improve Efficiency and Lower Working Costs in and on the Mines of the Witwatersrand."

We are endeavouring to arrange that a committee consisting of Mr. F. G. A. Roberts, Technical Adviser of the Chamber of Mines, Dr. Caldecott, Mr. Hildick Smith, Manager of the Robinson Mine, and the Editor of the *S.A. Mining and Engineering Journal*, will adjudicate the essays submitted.

Criticism should be constructive rather than destructive, but the assurance is given that no competitor will in any way be prejudiced in his employment by the submission of criticism of existing means or methods.

Essays containing libellous or malicious statements against any particular individual or individuals will not be considered.

TERMS OF THE COMPETITION.

The conditions of this competition are as under:

1. Essays must not exceed 2,500 words in length, and where new or suggested devices form an essential portion of the Essay, the contribution should be accompanied by diagrams clearly exhibiting the nature and functions of such device or devices.
2. Essays should be typewritten or written in easily legible handwriting on one side of the paper (preferably of foolscap size) only.
3. Each essay must state the full name and address of the author and if the author is an employee of a Mining Company operating in South Africa or has been an employee of such a company, his occupation and position should be stated.
4. Essays and diagrams (if any) must be addressed to the Editor, the *S.A. Mining and Engineering Journal*, Box 963, Johannesburg, and be marked "Competition" in the top left-hand corner of the containing envelope.
5. The competition closes on July 1st, 1921.
6. In the event of the Committee of Adjudication deciding that no essay submitted merits the award of £25, the Committee will have power to withhold the award of such a prize and to give in lieu thereof an amount which they consider proportionate to the value of the best article or articles submitted.
7. It shall be at the option of the Editor of the *S.A. Mining and Engineering Journal* to publish any essay or any portion of any essay submitted and to pay for such essay or portion thereof at the rate of £2 2s. per page according to the measure of pages in the *S.A. Mining and Engineering Journal*.
8. No correspondence can be entered into regarding this competition, and the Editor of the *S.A. Mining and Engineering Journal* will not hold himself responsible for the safe return of any manuscript submitted, but where a stamped and addressed envelope is for-

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warded with each contribution the Editor will, after adjudication, endeavour to return unsuccessful contributions.

9. A competitor may submit more than one contribution.
10. It is an express condition accepted by and binding upon all competitors that the decision of the Committee of Adjudication as constituted above or of any alternative adjudicators is final and absolute. Submission of manuscript will infer a full understanding of the acquiescence of the competition in this and other conditions of the competition.

11. Essays may be written in either of the official languages.

Points for Competitors.

There are one or two matters in connection with this essay competition which we would like to bring to the notice of competitors.

In the first place it should be made clear that a good idea will not be debarred from winning the prize offered because the contribution fails from a literary point of view. Neither will brevity be a handicap. On the contrary we shall welcome briefly expressed ideas and suggestions provided that they contain some useful and new idea or some better application of an idea or device which is not new or novel.

The problem of efficiency on the Rand has been investigated in tremendous detail by Mr. Hildick Smith, Manager of the Robinson G.M. Co. We have recently been privileged to examine the numerous charts, diagrams and curves which have been evolved at the Robinson Mine and which illustrate the value and result of the application of a basic system of applied efficiency which is not a mere nine days' wonder but is an intelligent and successful effort to devise a method whereby industrial flaws can instantly be detected, effective remedies can immediately be prescribed, the relationship of each department to each other department in the matters of economy and efficiency can be determined, and a lasting method of getting the utmost profit out of a ton of rock or out of a whole section can be controlled by the managerial efficiency organisation. We understand that by the adoption of this system a saving of something like £10,000 in stores alone was achieved at the Robinson last year.

We hope in the near future to publish a valuable paper by Mr. Hildick Smith on the evolution and application of this system at the Robinson. It is hardly necessary to say that Mr. Hildick Smith's paper is not being entered for this competition. The average mine employee has not the facilities of a manager for investigating this all important problem. And it is "the average mine employee," the working miner, the shift boss, the amalgamator, the cyanide shiftsman, or the mechanic from whom we wish to draw views and opinions. But contributions will be considered from all and every body irrespective of rank or occupation, nationality or profession.

We account ourselves extremely fortunate in having secured the services of Dr. Caldecott and of Mr. Hildick Smith as adjudicators in this competition, and we shall be pleased indeed if we can add to these the name of Mr. F. G. A. Roberts, Technical Adviser to the Chamber of Mines.

Quarterly Reports.

Owing to pressure on our space this week, a large batch of important company reports for the quarter ended March 31 last has been unavoidably held over.

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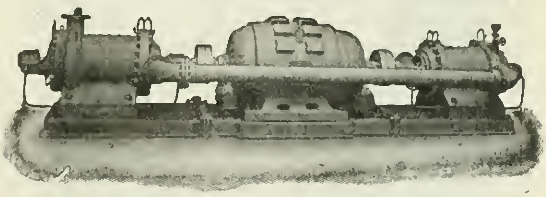

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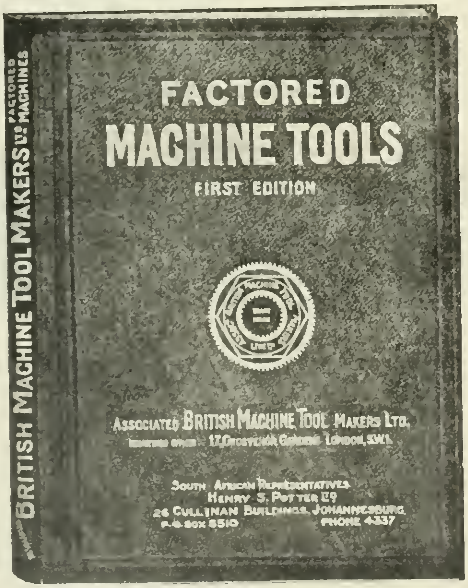
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EDITORIAL.

THE FINANCIAL POSITION.

The financial position of the Union has formed the subject of a full-dress debate in the Union Assembly this week. As usual, however, the voice of the farmer was most loudly heard; and so far the case for the mines seems to have been dismissed in a few lines of Sir Abe Bailey's speech. It may be that something more will be said for the sorely pressed urban population before the debate is finished. We are forcibly reminded of the plight of the mining industry at this juncture by the issue of the quarterly report of the East Rand Proprietary Mines, showing, for that large labour-employing property a loss of £31,168 for the first quarter of this year. How dependent the East Rand Proprietary Mines are upon the gold premium is eloquently evidenced by the 1920 report recently issued. It appears that, although the additional revenue secured last year above what would have accrued from the standard price of gold was no less than £527,000, only £193,000 of this was retained as working profit. Working costs further rose last year to 27s. 7d. per ton, whereas the average value of the ore reserves with gold at its pre-war price would be barely 26s. per ton. More serious still, these reserves have relapsed by 223,500 tons to 2,410,850 tons, or only about twenty months' supply for the treatment plant. For some time past about half of the ore milled has been " reclamation rock," not included in the declared ore reserves, and although as a rule lower in value than the latter, yet cheaper to work. Unfortunately the best of this " reclamation rock " has now been removed. Reference to the consulting engineer's report shows that the comprehensive development programme carried out during 1920, in the lower levels of the company's property, has failed to discover payable ore of sufficient extent and value to affect the future of the mine. " The failure to discover adequate ore bodies capable of replacing the tonnage taken out of the mine has (the directors point out) a most material bearing on the working life of your property." In fact, the consulting engineer remarks that " in considering expenditure on development it is becoming increasingly difficult to satisfy even the moderate condition of a return of the money spent."

In other words, and read in the light of the loss on working for the first quarter of the current year, there is a grave danger of the E.R.P.M. having to close down, if some big reduction in the wage bill cannot be effected. The urgency of the matter is plainly at least as great as that of the market for the farmers' produce, over which so great an outcry is being made in the Assembly. Moreover, the Transvaal Provincial Council, true to its character, has been engaged in devising fresh burdens for the town-dweller during the week, which have taken the shape of a Provincial Income Tax disguised under the name of a Poll Tax by its sponsor, the Nationalist leader, Mr. Reitz. This simply means that the deficit in the Provincial Budget will be made up out of the pockets of the unfortunate urban dweller. The latter's position, as far as the Rand is concerned, grows worse daily as the plight of the big low grade mines like the E.R.P.M. becomes more serious. And from neither the Government nor Labour comes any sign of sympathy or understanding. It is true that the commercial community, as represented by the Johannesburg Chamber of Commerce, has sent a strongly-worded appeal to the Provincial Council to recognise the financial straits to which industry and commerce on the Rand are now reduced. The appeal, we make bold to say, should have been addressed first to the Union Government, coupled with some constructive proposals to ward off the catastrophe that threatens the whole community in the event of more mines closing down.

The fears expressed by Sir Lionel Phillips and other leaders of the industry during the past few months, fortunately have not yet materialised in their worst form. But we are not out of the wood. The worst has yet to come; and failing the adoption of some heroic measures to reduce working costs, we cannot see a glimmer of light in the gloom. Public opinion must be aroused to the facts of the situation, and we have to thank Sir Abe Bailey for putting the matter bluntly to the Assembly on Wednesday. Sir Abe, according to the telegraphed report of his speech, commented on the seriousness of the position of the gold mines, which were kept going only for the miners, the traders and the Government. He said there were 12 mines which were to-day in a most precarious position. He asked them to realize that once a mine closed, it closed for ever. He ridiculed the idea of pooling the gold mines. To-day, said Sir Abe, the mines could be helped by Labour, and he advocated the importation of natives from north of latitude 22 degrees south, pointing out that the health objection had now disappeared. He declared that what he wanted to see was more goodwill towards the mines. On the general financial position, Sir Abe of course is peculiarly well fitted to express an opinion; and his views seem to coincide with the following pithy quotation from Sir Thomas Skinner, which admirably sums up the course of financial events since the Armistice:—" The Armistice should have been immediately followed by the serious realisation of the awful waste of the War, and the need of immediately facing the necessity of the utmost effort at reparation. Instead was displayed by governments, national and municipal, by industrial corporations and philanthropic institutions, a degree of buoyancy and extravagance more befitting a nation which had come into a few thousand millions than one which had lost that much. For eighteen months the orgy was kept up. And then with surprising suddenness the real situation was realised in all ranks. With almost inconvenient unanimity it was resolved to give up or suspend all but the most necessary expenditure. For some months now we have been undergoing the effects of the reaction. The beneficial result is being gradually felt, and once more business affairs in several directions seem to be on the upgrade. But it is not the less necessary that the restraining forces should be kept in the utmost rigour for we have now to make good not only all that was due to the War, but the wasteful extravagance of the past two years. Public opinion alone brought about the reaction we now see. Public opinion alone can secure the continuance of the necessary restraint."

And in the case of South Africa, it is plain that public opinion will have to be rudely awakened to the grim realities of the situation if we are to escape the evils now threatening

THE DIAMOND OUTLOOK.

The outlook in the diamond market is said to be more hopeful. Speaking at Capetown this week at the annual meeting of the Consolidated Diamond Mines of S.-W. Africa, Mr. H. C. Hull said that "a more hopeful tendency in the diamond market was reported by those who were best able to judge its future, and it was hoped there would be a partial recovery at any rate before the end of the current year." This is corroborated by Mr. Burton in his recent speech introducing the Budget. It may be useful to put on record his considered remarks on that occasion, which, it may be noted, was preceded by a conference at Capetown of all the big diamond interests in the Union. Mr. Burton said: "We estimated in 1921 for £1,250,000 from diamond export duty and we got £812,000, and the question is what we are to estimate for 1921-22. I am told that the Diamond Syndicate is practically unable to sell any stones at the present time. During the first quarter of 1921 their sales totalled £80,000 as compared with £1,200,000 for the preceding quarter. It is difficult to say what were the causes of this, but we suppose one was the restricted purchasing powers in America and England, while I am told that valuable stones had been put on the market by the Russian Government, although I cannot speak as to the truth of that. It is impossible to forecast accurately what revenue will be derived from this source during the coming year, but our estimate is going to be £300,000 and this would allow for a reasonable and moderate recovery, but it would be extremely rash to put our figure at anything higher than that. In regard to other diamond undertakings, there is the Government share in the Premier mine, and in this case we have the opportunity of sharing past profits to some extent, and from this source we estimate £150,000." It will be seen that the most that can be expected is a "reasonable and moderate recovery" during the current year, for which small measure of mercy we should, no doubt, be duly thankful.

Notes & News.

Our Half-Yearly Index.

The half-yearly index to the *South African Mining and Engineering Journal*, covering the period September 18th, 1920, to February 26th, 1921 (Vol. XXX., Part I.), appears as a Supplement in this issue.

* * * *

Oil in the Free State.

We understand that oil in appreciable quantity has been discovered on the Basutoland border of the Free State. Drilling is being proceeded with, and for obvious reasons those concerned are not, at the present stage, courting publicity.

* * * *

New Modder's Increased Crushing Capacity.

The present crushing capacity of the New Modderfontein is between 90,000 and 100,000 tons per month. This is now being augmented by a further 8 stamps and the necessary treatment plant. The new equipment was expected to be in commission by the end of the current month. The stamps are, of course, Nissens.

Miners' Wage Reductions.

From Denver, Colorado, it is reported that more than forty mining companies, operating in practically every mining district in the State, legally notified the Colorado State Industrial Commission of a reduction of 2s. (50 cents) per day—that is, from 18s. (4.50 dollars) to 16s. (4 dollars) per day—general depression in the mining industry and low prices of the metals being given as the reason for the wage reduction. The Mining Commission held the proposed reduction reasonable. More than 1,000 miners are affected.

* * * *

Geluck Oils.

The option on Sheepmore held by this company has been extended for a further two years, at half the price formerly paid. The company is to be congratulated on this excellent stroke of business.

Since this intimation was received, we learn that the second seam has been struck in No. 3 shaft on Sheepmore, near the railway. This is, presumably, the seven feet seam indicated on the Government maps.

* * * *

A Chinese Puzzle.

From the Bureau of Economic Information of the Republic of China, we have received a valuable collection of information regarding the industrial progress of the great Eastern Republic. That the Bureau's knowledge of the geography of this country is less than its knowledge of its Press is shown by the fact that we are addressed as the "S.A. *Mining Journal*, Transvaal, British Basutoland, South Africa."

* * * *

Consolidated Silver and Lead Mines.

A new company has been registered under the name, Consolidated Silver and Lead Mines, Ltd., with a capital of £100,000 to develop a property in the Kaapsche Hoop district. The promoters are closely connected with the people who so successfully financed the African Oil Company. Mr. F. W. Diamond is the secretary. We hope to print further particulars at a future date.

* * * *

Springs Mines Improving Development.

It is encouraging to learn that development at Springs Mines recently has taken a marked turn for the better. In the quarter ended with March 31st the linear development amounted to 4,113 feet, of which 3,598 feet were on reef, averaging 23·80 dwts. over a reef width of 16·39 inches. Of the footage on reef, 1,975 feet, equivalent to 56·8 per cent. of the sections sampled, were payable, and averaged 30·10 dwts. over 20·93 inches. Since the conclusion of the quarter even better results have been secured and the outlook for the company has improved very materially.

* * * *

A State Lottery.

In the Assembly last week Mr. Jagger, replying to Mr. Nathan on behalf of the Minister of Finance, said the Government did not propose to introduce legislation to give effect to the recent decision of the Transvaal Provincial Council in favour of a State lottery. Public opinion, of course, is strongly in favour of a State lottery; and this paper has always supported the idea of raising money by lotteries or premium bonds. It is noteworthy that the Municipality of Paris is advertising a six per cent. loan with premiums running up to a million francs as first prize.

* * * *

Another Oil Discovery!

A further petroleum discovery in the Boshof district is now reported by the *Diamond Fields Advertiser*. That paper is informed that as a result of prospecting on the farm Leeauwkop, district Boshof, 14 miles from Kimberley, indications of oil have been discovered, and an analysis of samples taken at a depth of 192 feet have been declared by Mr. W. Gasson, M.P.C., Assayer and Analyst of Kimberley, to contain petroleum or shale oil as originally formed. It is the intention of the option holders to form a powerful syndicate for the purpose of thoroughly testing this discovery, and also for prospecting on other farms, options on which have been acquired and also traces of oil discovered.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

Brakpan Mines—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House, May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House, May 17.

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

S.A. Land and Exploration Co., Ltd.—Eighteenth ordinary general; 38 Meischke's Buildings; May 18, 12 noon.

Knight Central.—Corner House; May 20.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Union Corporation, Ltd.—Ordinary general meeting; 94 Main Street; June 3, 11 a.m.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rand Mines.—Corner House; June 2

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Mining.

Stone Dusting Methods.—Iron and Coal Trades Review, April 1, p. 465.

A New Form of Rescue Apparatus.—Colliery Guardian, April 1, p. 915.

The Largest Mine Hoist in the World.—Skilling's Mining Review, Dec. 18, p. 1.

Coal.

Coal Assaying Apparatus.—The Engineer, April, p. 355.

How Ships are Loaded and Coaled at Cardiff.—Coal Trade Journal, March 23, p. 343.

How Boiler Plant Design Affects Combustion.—Coal Trade Journal, March 23, p. 345.

Deep Mining Problems.—Colliery Guardian, April 1, p. 952.

Best Methods of Supporting Roof and Sides in Mines (illustrated).—Iron and Coal Trades Review, April 1, p. 455.

Scientific Research in Coal Mines.—Iron and Coal Trades Review, April 1, p. 463.

Engineering.

A Modern Electric Crane Equipment.—Iron and Coal Trades Review, April 1, p. 468.

Visible Stresses.—The Engineer, April 1, p. 351.

A United States Super-Power Scheme.—Electrical Review, April 1, p. 401.

Troubles in Water Tube Boilers.—Electrical Review, April, p. 403.

The Long Distance Telephone System of the United Kingdom.—Electrical Review, April, p. 429.

Iron and Steel.

The Argument of the Canadian Iron-Ore Producer for State Assistance.—Iron and Steel of Canada, March, p. 251.

The Utilization of Lean Iron Ores.—Iron Trade Review, February.

Importance of Hardness of Blast Furnace Coke.—Iron and Steel, March, p. 46.

Miscellaneous.

Economy and Profits.—Colliery Guardian, April 1, p. 952.

Coal Mine Finances.—The Statist, April 2, p. 549.

Key Industries and Anti-Dumping.—The Statist, April 2, p. 550.

Human Waste in Industry.—The Indian Engineer, January, p. 1.

Prospecting on Krugersdorp Town Lands.

In connection with the prospecting for gold on the Krugersdorp town lands, Mr. E. Kumst, who recently entered into a contract with the Krugersdorp Municipal Council, has objected to the clause whereby he was called upon to pay a royalty of 6½ per cent. of the gold won, and he urged that it should be reduced to 1 per cent., or 5 per cent. of the net profits. He added that the mining houses had refused to entertain the proposition on the basis set out in the contract, or on more than the amount stated. The matter was referred by the Council to the Government Mining Engineer, who has replied: "A royalty of 5 per cent. of the net profits, or 1 per cent. of the gold won is a low one, and lower than any that have yet received my recommendation. Of the two bases of royalty, I prefer the 1 per cent. of the gold as I am not at all sanguine as to the gold being worked at a profit in this area. Further, the winning of gold in other than some small quantities is, in my opinion, so improbable that, if the Municipality cannot obtain better terms, it may be as well to accept them, as the prospecting may indirectly benefit the town."

ENGINEERING SECTION.

Improvements in Telephony.

INTRODUCTION OF THE AUTOMATIC SYSTEM.

Telephony, like other branches of the electrical art, has made notable progress during recent years.

In the attempt to improve the circuit switching equipment two distinct schools have been created, each backing a different system of operating.

These systems can be designated as follows:

(a) The centrally-operated system.

(b) The subscriber-operated system.

The term "centrally-operated" applies to a system in which all of the labour of interconnecting of the telephone users' lines is done by human agency in the form of telephone operators at the central office. Because the final connecting of the lines at the central office portion of the system is done by hand method, the complete plant is popularly known as the "Manual Telephone System."

On the other hand, the term "subscriber-operated" designates a system in which purely machine methods are used at the central office for the interconnecting of the telephone users' lines.

The human intelligence in this case is supplied by the telephone user (subscriber) who manually operates a mechanically governed circuit interrupting device a number of times, so as to produce the circuit switching charges in the central office.

Because the central office portion of this system is made up mainly of mechanical switching mechanism, the complete plant is known as the "Automatic Telephone System."

Operation of the Full Automatic System.

In a full automatic system such as that designed by the Western Electric Co. the subscriber is provided with the usual central battery instrument, on which is mounted a number sender (Fig. 1). A subscriber desiring to be connected with another subscriber in this automatic system removes his microphone from the cradle switch and operates the number sender.

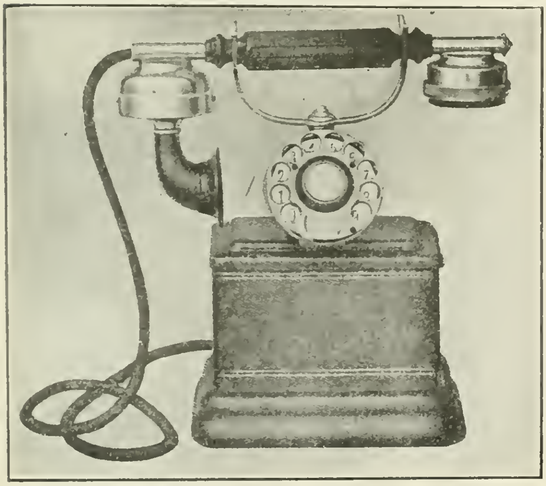


Fig. 1.—Number Sender, Mounted on Instrument.

This he does by inserting his finger in a hole corresponding to the digit wanted and pulling the dial to a stop, following which the number sender in returning to its normal position sends out a corresponding number of impulses, repeating the operation for each digit of the number wanted.

The general operation of the system showing the working of the various pieces of the apparatus may be briefly described as follows:

The removal of the microphone of the calling subscriber's set causes the brushes of a "line finder" (Fig. 2) in the exchange to rotate until they have connected with the calling line. The line finder next connects with an "idle register" which is now ready to receive the electrical impulses sent out by the subscriber number sender.

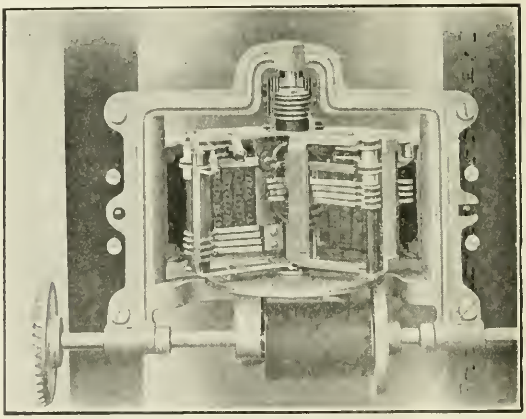


Fig. 2.—Line Finder.

Each set of impulses is received by the "register" (Fig. 3), stored and translated. As soon as the first set of impulses has been received the "register" begins to build up the desired connection. The first set of impulses from

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.
SURVEYOR'S CERTIFICATES — March, July and October (Extra) Exams 100 %, 50 % and 66 % respectively of S.A. total.
MANAGER'S CERTIFICATES. — Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A.
OVERSEER'S CERTIFICATES.—Two-thirds of the S.A. total for year 1920 75 % for January, February, March, 1921.
COAL CERTIFICATES.—Candidates being enrolled
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

the register chooses and releases that brush of a "first group switch," which is on the level of terminals connected to the "second group switch" having access to the group of 200 lines where the wanted line is located.

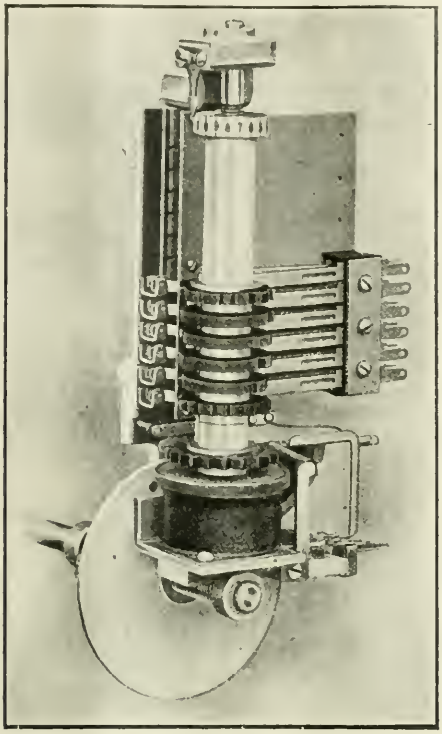


Fig. 3.—Register.

The brush next automatically sweeps over the terminals, seeking an idle trunk, which when found, extends the connection to a "second group switch."

The second set of impulses from the register chooses and releases the proper set of brushes in the "second group switch" and then sweeps over the terminals connected to the "final switches" which have access to the bank of 200 lines in which the wanted line is located.

The line is thereby extended to the final switch.

The third set of impulses from the register chooses and releases the proper brush in a "final switch" and the fourth set of impulses from the register will cause this chosen brush to be moved forward a definite number of steps, until it stands on the terminals of the wanted line.

Now the register disconnects itself and is ready to serve another call, while the conductor from the line finder to the first group switch remains connected.

In the meantime the "final switch" has tested the line, and applied ringing current if it be free; if not, a buzzy tone is applied to the line instead.

The ringing current is cut off automatically, as soon as the called subscriber answers.

Should the line called be a main set with an extension, and the latter be required, the throwing of the key at the main set may open the circuit momentarily. For this reason the designers have preferably arranged that the called subscriber cannot initiate the clearing of a call. A calling subscriber cannot, however, block the line of the called subscriber because restoring the microphone will cause a lamp to light notifying the mechanic in charge that there is a connection up, cleared out only one way, that needs attention.

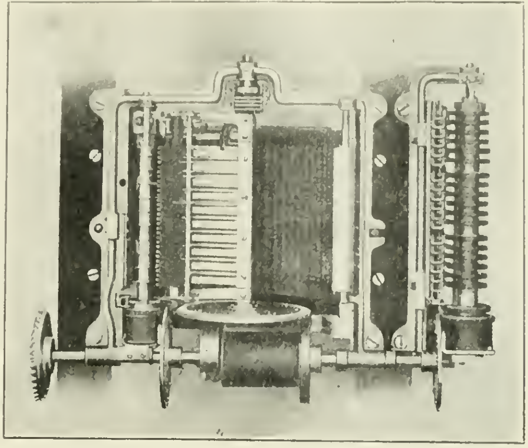


Fig. 4.—Group and Sequence Switch.

When the above condition does not obtain, the system can be readily constructed, however, to clear from either sub-station.

The calling subscriber, in restoring his microphone, initiates the clearing of the connection or the returning to normal of the switches, and at the same time automatically registers the call.

The line of the subscriber is cleared immediately so that he may at once send a second call.

Power Drive.

One of the characteristic mechanical features of this machine switching system is the power drive.

The power needed is taken from a commercial motor, and is brought to the switches by a system of simple shafting, interconnected by bevel gears as shown in Fig. 5.

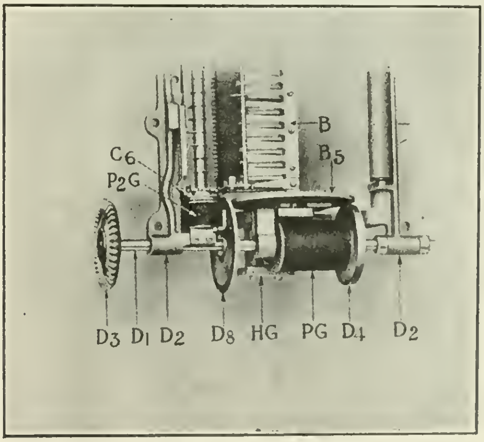


Fig. 5.—Magnetic Power Clutch.

There is provided for each switch, as shown, a short shaft D 1 held in bearings D 2 and coupled to the vertical power shaft by a bevel gear D 3. This shaft revolves constantly at the very slow rate of 31 revolutions per minute.

To transmit the power to the movable parts of the switches, a very simple and effective form of magnetic clutch is made use of. It consists of an iron disc fixed on the rotating shaft and a second iron disc fixed by a diaphragm on the shaft of the movable part; an electro-magnet, when energised, firmly holds together the edges of the two discs, placed at right angles, and thus forces the second disc to revolve with the first.

For the brush carriage the disc D 1 is fixed on the revolving shaft D 1 and the second disc B 5 is fastened by a diaphragm to the shaft B of the carriage.

To rotate the carriage, the fixed electro-magnet P.G. is energised and attracts the edges of the two discs, whereupon the disc B 5 revolves with the disc D 4.

When the circuit of the electro-magnet P.G. is opened, the disc B 5 is released and carriage stops.

To prevent the inertia of the brush carriage carrying the brushes beyond the terminals, a holding magnet H.G. is arranged to be energised, the instant the power circuit is opened and so to bring the carriage to an immediate standstill.

For the trip spindle the disc D 8 with its diaphragm is fastened to the shaft D 1 while the spindle itself carries the second disc C 6.

When the fixed power magnet P 2 G is energised, the first disc is drawn against the second and transmits motion to the spindle.

The inertia of the spindle is small, so that the roller spring and the power cam are sufficient to hold the spindle in an operated position.

For the sequence switch shown in Fig 6 like the trip spindle, the disc D 11 is fixed to the shaft by a diaphragm while the spindle carries the second iron disc G 5.

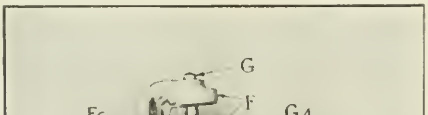


Fig. 6.—Sequence Switch.

To rotate the spindle, the fixed electro-magnet R 2 is energised attracting the first disc against the second.

To stop the spindle the circuit of the power magnet R 2 is merely opened.

The magnetic clutch is made of a few simple parts which do not require adjustment; they are subject to little wear, and that self-adjusted.

The clutch and release are almost instantaneous and thus suitable for fast selective operations.

Any power needed for closing firm contacts is readily transmitted without slipping.

The power required to operate the shafting is very small. A 2 h.p. motor is more than able to operate the switches in a 10,000 line office. Reserve motors are provided and readily switched in when required.

PREVENTING DECAY OF MINE TIMBER.

According to a Bulletin of the U.S.A. Forest Products Laboratory, great quantities of valuable timber are being placed in mines without any protection against decay. Experiments showed that timbers treated with coal-tar creosote installed in an Alabama mine remained sound for ten years, while all the untreated ones had to be removed. Four-fifths of the treated timbers were still good. Creosote is the most effective preventive of decay, but is objectionable on account of the fire-risk. Sodium fluoride and zinc chloride are odourless, and possibly diminish the fire-risk. They are cheaper than creosote, and may be injected by the steeping, open-tank, or pressure methods. The saving is so marked that it will be profitable for all mines to use some process.

HUGE STEEL ROLLING MILL.

The very large "three-high" mill for folling plates, which has just been installed in a British steel works, embodies many improvements introduced by its British makers. This mill is designed to roll plates from one-eighth of an inch up to 1½ inches in thickness to a length of 60 feet and a breadth of 8½ feet. The maximum weight of the finished plate is five tons. An electric motor—also made in Great Britain—capable of developing 4,500 horse-power, drives the mill, which is fitted with a 45 ton fly wheel, so that a total driving power of 11,500 horse-power is available for heavy work. All movements of this mill, from the receipt of a slab to the discharge of a rolled plate, are controlled electrically by two operators in an elevated "pulpit" immediately over one side of the mill. Manual effort is entirely absent.

The Chrisholm-Moore Manufacturing Co., of New York, makers of the famous "Cyclone" chain hoists, have appointed Mr. H. Parker Wood as their representative for South Africa. That "Cyclone" hoists will become a popular line on this market now is a foregone conclusion. That there is a vast difference in chain hoists is common knowledge, and because of their superiority over other hoists in the matter of strength, simplicity and price, the Cyclone hoist will find a ready market with the mines and railways of this country. Mr. Parker Wood has been established now over twenty years in Johannesburg, Cape Town and Durban, and is well known in the mining trade circles, and was instrumental in placing "Pacific" white lead on the market here, a line which has now become so popular. Another well-known firm by whom Mr. H. Parker Wood has been appointed representative is the P. and F. Corbin Company, manufacturers of the world renown "Corbin" locks, which include a special range of padlocks for mining and railway use.

Pneumatic Tools.

We have received a copy of the Globe Pneumatic Engineering Company's Catalogue of Pneumatic Tools, in all their variety and many uses. During the stress and necessities of the war, for mechanical and pneumatic tools of precision, this world famous company came to the front,

Extending the Use of Concrete in Mines.

MANY APPLICATIONS OF CONCRETE TO MINING ENGINEERING—EXAMPLES FROM OTHER FIELDS.

In view of the growing use of concrete on the mines of the Rand, it is noteworthy that in America the extensive use of concrete is making properties cleaner, safer and more desirable places to work, and at the same time the inherent qualities of concrete as a structural material prove a dividend returning investment.

Surface uses for concrete construction about a mine are many and varied. For building powder magazines, mine portals, foundations for mills, smelters and other structures, tunnels to carry pipe lines and electric conduits, highways, coatings on buildings for fire protection, and for numerous other purposes, the mines have found concrete to be the ideal building material.

Extracts from the report of a construction engineer on a reinforced concrete change house indicate the appropriateness of concrete construction for buildings of this kind. The building design follows the lines of standard reinforced concrete construction with special attention being paid to make the structure as convenient as possible for the purpose for which it was erected: that of providing a sanitary, dry house for the underground crews to change in, and to supply them with ample hot water and heat, without which two considerations a structure of this character would be a failure.

After going very carefully into the matter of suitable equipment to provide a means of taking care of the clothing of the underground crews, the management decided to build 30 concrete lockers as an experiment, and equip the balance of the structure with sets of hanger chains as a substitute for lockers.

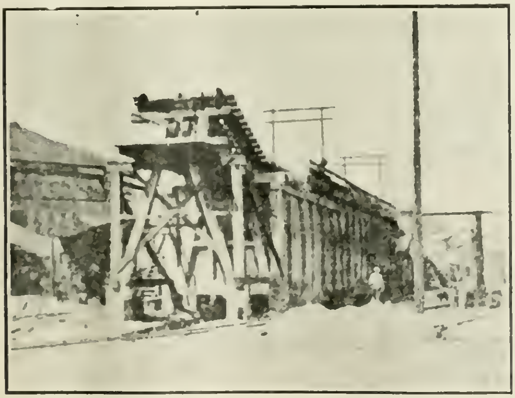
Concrete lockers are 20 x 20 x 60in. in size and provided with coat and hat hooks, a shelf for shoes, etc., a perforated bottom to allow quick circulation of the heat from the steam coils, a sloping top so that discarded clothing cannot be piled up, and a wire-mesh door which slides in vertical guides.

Throughout the entire building effort was made to make the structure as nearly fireproof as possible, and the only combustible material used in the construction was a small amount of lumber as supports for the hanger chains and the benches.

In a building of this sort sanitation is of the utmost importance, and that quality is best obtained in an all-concrete structure.

For Roads.

At Kellogg, Idaho, to provide an adequate traffic-way from the end of the city paving to the mine and the smelter, the mine officials authorised the construction of a 1.63 miles concrete road, 16ft. wide. The company paid the entire cost for the construction of this highway. The first section, ⅝ mile long, near the city, was built by day labour in 1914. This section was constructed 5in thick with 1¼in. old tramway cables, placed longitudinally 3ft. apart, for reinforcing. The balance of the road was built in 1918, 8in. thick and with the same type of reinforcing.



Coal Bunker Covered with Gunite.

This highway forms a part of the Yellowstone trail and the National Parks highway from Kellogg west to Spokane, and bears heavy traffic. During the tourist season may be seen pleasure cars from all sections of the country mingling with the heavy trucks hauling supplies to and from the mine and the concentrator.

Protection Against Fire.

Another important use to which concrete has been put at Kellogg Mine is the coating of buildings with a layer of concrete on wire lath. Within the last few years several fires have broken out in the mine yards with disastrous results. During one of these the entire surface plant was threatened.

To overcome this fire danger, it is planned to gunite practically all of the buildings and bunkers in the mine yard. The wash-house and the oil-house were covered with a concrete coating both inside and out, the inside covering being for sanitary purposes. Other buildings, and the coal and ore bunkers were covered only on the outside, the protection covering both the walls and the roof.

Concreted Underground Workings.

A 1:4 mixture of cement and fine, crushed quartzite, the tailings of the concentrating plant, was used on the roofs. A 1:5 mixture was used on the walls. For inside guniting ½-ply rubberoid was first placed on the walls. On this lath were nailed about a foot apart to which the wiring was attached. A coating of concrete ¾in. thick was then placed.

For the outside work on the walls and the roofs of the outside buildings, 1in. diagonal mesh wiring was nailed on the vertical batons of the outside walls of the building. Gunite, about 1in. thick was shot on this, forming a protective concrete shell over the entire building.

The average cost for this work, including all items, cost of materials, labour, staging and cleaning up was approximately 90cts. per square yard. It is planned to cover a limited number of buildings each year until all except a few of the largest buildings have been protected against fire and weather, the covered buildings present a neat, uniform appearance which adds much to the general appearance of the grounds.

Use Underground.

Approximately 10,000 cu. yards of concrete have been placed in the underground workings of the mine. These have been placed mostly as linings in the tunnels, where roof conditions were unsafe, and in hoist stations, where so many props are necessary to hold up the unprotected roof that they not only obstruct the sight, but constitute an ever present danger and a constant expense.

Bad roof conditions in tunnels and hoist stations require a great many props to hold up the roof, and as conditions become worse, more props must be added, until the restricted area is so cluttered with posts as to seriously interfere with safe operation. When these places are lined with concrete, there are no posts to obstruct vision and the arched span under the roof absolutely eliminates danger from falls.

The first step in concreting underground structures is to place helper posts as near as possible to the track and then remove the old posts. Muck and loose material between the helper posts and the rib of the tunnel is then cleared away to about 2ft. below track level or until solid footing is obtained. Wall forms are built at least 18in. from the wall of the tunnel, and extending upward to the top of the old caps. Arch ribs are then thrown across and braced on stringers running lengthwise across the caps. The walls and both sides of the arch are then cast, leaving about 3ft. in the centre for an arch key. After the concrete has set sufficiently to allow the removal of the side forms at the arch key, the gap is boarded over and the concrete for the key is driven in with the compressed air gun until the balance of the roof is solidly packed.

Since the thrust of the arch is held by the rock walls on each side of the tunnel or hoist station, the concrete arch is under compression and needs no reinforcement, for it can break only under sufficient weight to crush 30 to 48 inches of solid concrete.

Special Methods Needed.

The necessity of handling all concrete materials in the cramped space in the tunnel or station, and of keeping out of the way of even the small amount of traffic which goes on during the graveyard shift, makes such work slow and inconvenient, and requires special methods of mixing and placing the concrete.

Aggregates are dumped into a bucket and hoisted into an elevated hopper. From here they are drawn into the compressed air gun. The gun is simply a right-angle elbow, reducing from a 15in. intake down to a 5in. discharge, with a 2in. air line cut in at the back of the elbow and facing into the 5in. discharge pipe line. After the aggregates and water are inside the gun, the top is closed and the air turned on. The materials are mixed en route as the compressed air forces them through the pipe and around the turns to the cramped quarters where the concrete is placed. When the forms are removed, instead of the rock roof and walls and the numerous obstructing props in the narrow and confined area, the tunnel or station is transformed into a clean, safe, arched room, free from all obstructions.

The sense of security against accident and fire and the freedom from upkeep and replacement which characterises concrete structures are dividend-paying influences, just as effective in and around a mine as they are in any other industrial plant. Even more valuable are those qualities in mining enterprises where strength and fire-resistance are the principal requisites of a structural material, upon the integrity of which depends the safety of the workers.

SOME ADVANTAGES OF ALCOHOLIC FUEL.

In connection with the flotation of "Penrol," details of which were given in our last issue, it is noteworthy that, according to an authority, alcohol possesses advantages not found in gasoline. The raw material for its manufacture is annually reproduced by Nature in all places where earth, water and sunshine are found. Its storage and use are less restricted by insurance regulations than in the case of gasoline. In case of fire it can be readily extinguished by water, it mixes in all proportions with water, and will continue to operate an engine even if diluted to 50 per cent. with water. It generates less heat of combustion, consequently requires less cooling water; the cylinder temperatures are lower, consequently cylinder lubrication difficulties are eliminated and carbon deposits are prevented. The rate of flame propagation is less and the pressure more nearly uniform throughout the entire stroke of the piston, resulting in smoother operation, less vibration and the absence of pre-ignition knocking. Moreover, when alcohol is burned in an ordinary gasoline engine, the engine will develop from 10 per cent. to 20 per cent. more power than when gasoline is used.

Alcohol from Molasses.

The American Bureau of Mines also says there are tremendous undeveloped possibilities of producing motor fuel from molasses in the form of alcohol. It is estimated on the basis of conservative figures that the Hawaiian Islands have a potential annual production of nearly eight million gallons of 95 per cent. alcohol. The molasses is a by-product which contains in addition to fermentable material, other products of value, such as potash, available nitrogen and phosphoric acid. The value of these after recovery from fermentation is greater than the value of the original molasses, so that in calculating costs of the fermentation process for alcohol production, the raw material charge is probably a little less than zero. Alcohol has been proved by experiments conducted by the Bureau of Mines to be a highly efficient motor fuel.

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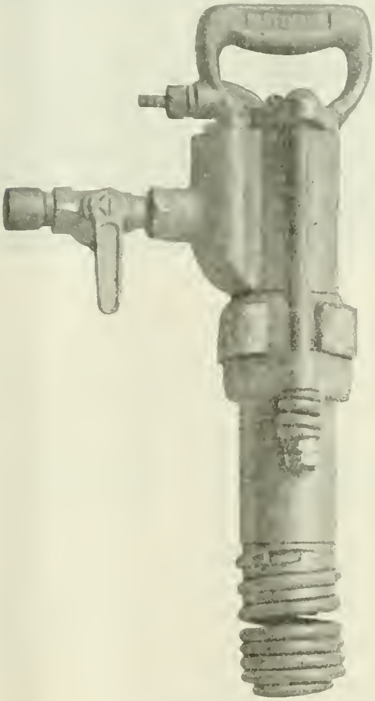
TWO NEW DRILLS.

The British Flottmann Drill Company, Limited, have recently introduced to the Rand goldfields two new types of machines, which they call their " EW " and " A3W " types, weighing 40 and 28 lbs. respectively. These machines are constructed on the well-known " Flottmann " practice of the ball valve and the lower part of the piston having both straight and spiral grooves for the rotation of the drill steel. No separate rotation spindle is employed. The whole machine, of course, being constructed of special high tensile steel forgings, no steel castings, phosphor bronze or other metal being employed. The main features of the new types are the addition of automatic lubrication which, with one filling of less than a gill of oil, lubricates the machine for a whole shift without further attention. The advantage of automatic lubrication has been a point which has attracted the attention of everyone connected with rock drills ever since the first power drill was introduced, and is one that has rarely been overcome satisfactorily in practice.



TYPE " E.W."

The advantages of the automatic lubrication of a rock drill are, of course, obvious; but we will take the liberty to enumerate them:—

(1) Increased drilling speed. Perfect lubrication of the machine, therefore machine giving its full efficiency through the whole shift.

(2) Cost of upkeep. Efficient lubrication, saving wear and tear, consequently less spare parts needed. A very important feature.

(3) Economy of lubricant. Less than one gill of oil required for a whole shift.

The other features of these new machines are the water feeding devices for the prevention of dust, which are of two types:—

(a) An axial water tube type of special construction, preventing the water getting into the machine or air mixing with the water.

(b) A special water feed attachment, which allows $\frac{7}{8}$ (seven-eighths) hexagon hollow drill steel to be used without any shanking whatsoever.

They have also introduced improvements regarding the rotation device, which will considerably reduce the cost of upkeep.

The British Flottmann Drill Company's representative, Mr. E. Fraser Jones, informs us that he would be pleased to give demonstrations of either type and also any further particulars to anyone interested. The address is P.O. Box 7067, Oceana Buildings, Simmonds Street; and the telephone number 3846 Central.

MAKING BOILERS SAFE.

To operate boilers, and especially water-tube boilers, with safety, it is necessary to prevent the water becoming too dense on account of the salts dissolved in it. A continuous means of measuring the density of the water is therefore most important, and it is supplied by a simple " densimetor " invented and manufactured by a British firm. In this appliance a column of distilled water is balanced against a column of water from the boiler, and the difference in the levels of the two columns is a measure of the density of the boiler water. A scale is provided by which the precise difference in levels can be easily read, thus giving the engineer in charge a ready warning when the danger point is being reached. This apparatus has received the approval of the boiler insurance companies.

Big Bridge Contract.

One of the biggest order for road bridge construction yet placed by the Public Works Department has been successfully tendered for by Messrs. Ash Bros., of Johannesburg, agents for the Cleveland Bridge and Engineering Co., of Darlington, Yorkshire, over a large number of American and Continental competitors. The work consists of 17 river bridges in various parts of the Union, and will entail the importation of several thousand tons of steel superstructure, the approximate cost being £200,000. The biggest bridge of the series is that which will be erected at Vereeniging, where five spans of 150 feet will be required to bridge the Vaal River and do away with the present ferry system.

Letters to the Editor.

MORIBUND COMPANIES.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I certainly admire the " free lance " attitude of your paper for the past few months. In mining matters you seem to have a " cut " at all and sundry from the top to the bottom on the point of efficiency, etc.

Now, sir, may I suggest that you turn your attention in another direction, that is, the question of liquidation of several mining companies which are quoted on your share list, such as East Rand Deeps, Eastern Gold Mines, Rand Nucleus, Middelvleis, Phoenix, and many others. I understand all the above have cash assets amounting to double their market price quoted, which means worth more dead than alive! As they stand at present shareholders have nothing to look forward to but the chairman's same old hardy annual speech which we have had for the past fifteen years: " Nothing done on your property during the year under review, etc." But I notice directors' fees still figure in their yearly accounts. Trusting this will meet with your approval and thanking you in anticipation.—Yours, etc.,

PIONEER SHAREHOLDER.

Johannesburg,
April 25th, 1921.

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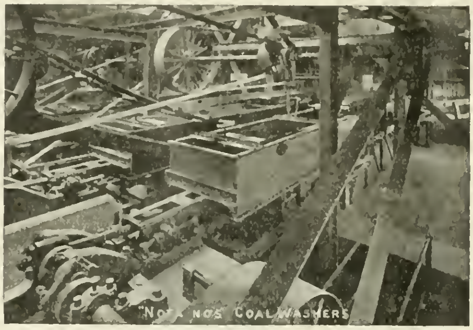

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The Week in the Sharemarket.

QUIET AND EASY—LITTLE BUSINESS DOING—AWAITING A LEAD FROM LONDON.

Apart from a little investment business, there is nothing doing in the market this week. The local market is waiting on London, and London, in its turn, is waiting on the Budget debate, the crisis in the now month old coal strike, and the result of the turning point in the negotiations with Germany. The effect of the splendid British Budget statement is unfortunately offset by the bad news regarding the coal strike and the delay in the coming of a real peace with Germany is also a discouraging factor. When these restrictive influences are removed business may improve here, as several stocks stand at temptingly low figures. Gedulds, Pullingers, and African Oils have been the firmest feature of the week. Apart from gold, diamond and base metal shares, all of which remain quiet, industrials are stagnant, and—as in the case of S.A. Alkalis—even on the down grade. Colliery shares are naturally a little firmer on increased demands for their product from every port. Union Loans have been firmer since the Budget statement by Mr. Burton, and National Banks on the declaration of an eight per cent. dividend.

	Fri. 22nd.	Sat. 23rd.	Mon. 25th.	Tues. 26th.	Wed. 27th.	Thurs. 28th.
Anglo-Am. Corp.	20 3	20 6	20 6*	21 6	21 0	21 0
Apex Mines	6 6*	6 9*	6 9*	6 9*	6 6*	6 6*
Bantjes Cons.	5 6*	5 6*	5 6	5 4*	5 6†	5 1*
Brakpan Mines	50 0*	50 0*	52 0*	53 6*	54 0*	53 6*
Breyten Colls.	—	5 0*	5 0*	5 0*	—	—
Brick and Potteries	—	—	—	4 6*	—	4 6*
Bushveld Tins	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Con. Diamonds	14 0†	13 6*	13 3*	13 3*	13 9†	13 0*
Cinderella Cons.	2 0*	2 0*	2 0*	2 0*	2 6†	2 0
City and Subs.	2 0*	—	—	—	2 0*	3 6†
City Deeps	41 6†	—	42 0*	42 6*	42 0*	42 6*
Clydesdale Colls.	25 6*	25 0*	25 0*	25 0*	—	—
Con. Investments	—	—	—	—	23 6*	23 0*
Con. Main Reefs	10 6	10 9	10 6*	11 0*	11 0*	11 0
Coronation Freeholds	1 0*	1 0*	1 0*	1 0*	0 9*	1 0*
Do. Syndicates	4 0	—	—	4 0*	—	—
Crown Diamonds	2 7*	2 9	2 9*	2 10*	3 0	3 0
Crown Mines	41 0*	—	39 0*	—	47 0*	39 9*
Daggafontein Mines	3 3*	3 1*	3 3*	3 3*	3 3*	3 6*
Durban Rood. Dps.	3 9†	3 9†	—	3 9†	3 9†	3 6†
E.R. Coals	2 0*	2 0*	2 0*	2 0*	—	—
E.R. Deeps	—	—	0 6*	0 6*	—	
E.R. Minings	—	—	—	—	6 3*	
E.R. Proprietary	4 10*	4 9*	4 9*	4 10*	5 1*	5 0*
E.R. Debentures	—	£70†	£70†	—	—	—
Eastern Golds	0 6*	0 7*	0 7*	0 6*		0 7*
Frank Smith Dmds.	3 0	3 1½	3 4*	3 4	3 3	3 3
Geduld Props.	47 0	47 3*	47 6	48 0	47 6*	47 3*
Glencoe Colls.	11 9	11 6*	11 6*	11 9*	—	11 6*
Glynn's Lydenburgs	—	—	—	9 0*	—	8 0*
Govt. Areas	78 6*	79 6*	80 0*	80 0	80 0*	79 6
Hume Pipes	19 0*	19 3*	19 0*	—	21 0†	—
Jupiters	3 7*	3 6*	2 6*	3 6*	3 7*	3 6*
Knight Centrals	4 3*	4 1*	4 3*	4 3*	4 3*	—
Knights Deeps	15 3*	15 0*	15 3*	15 0*	15 3*	15 3*
Lace Props.	8 0	7 0*	7 9*	7 9*	7 9*	9 0†
Leeuwpoort Tins	8 3	8 6	—	8 0*	8 3*	8 6*
Lydenburg Farms	4 9*	4 9*	4 9*	4 9*		5 0
Meyer and Charltons	85 0†	—	83 0*	—	—	81 3
Middelvlei Est.	1 0*	—	1 3†	1 3†	1 0*	—
Modder B.'s	25 6	24 9*	25 0*	25 6*	25 6*	25 6*
Modder Deeps	44 0	44 0*	44 6	45 0	44 9	44 9
Modder Easts	11 0	10 6	11 0	11 4½	11 3	11 1½
Do. Opts. (4 yrs.)	0 1*	0 3†	0 3†	—	0 3†	0 3†
Natal Nav. Colls.	31 0*	32 6†	31 0*	—	31 0*	31 3*
National Banks	—	220 0†	—	—	—	220 0†
New Eland Dmds.	22 0*	23 0*	24 6	22 6*	—	25 0
New Era Cons.	6 3*	6 3*	—	6 3*	6 6*	6 6*
New Geduld Deeps	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
New Kleinfonteins	5 6	5 6*	5 6*	5 8	5 6*	5 8*
New Modders	65 3	65 0*	65 6	66 0	66 0*	65 6*
New State Areas	21 9	21 6*	21 6	22 0*	22 9*	23 0*
New Unifieds	—		4 0*	—		—
Nourse Mines	7 9†	6 6*	6 6*	6 9*	—	6 9*
Pretoria Cements	54 0*	53 0*	52 3*	53 6	52 0	51 9
Princess Estates	0 10*	0 11*	0 11*	0 10*		1 0*
Rand Colls.	—	1 6†	1 0*	1 1*	1 0*	1 0*
Rand Nucleus	1 0*	—	1 0*	1 3†	1 0*	1 0*
Randfontein Cent.	9 0*	9 0*	9 0*	9 0*	9 3*	9 3*
Randftn. Estates	14 9*	14 9	14 6*	14 9*	14 6*	14 6*
Roberts Victors	8 0	—	9 6†	10 0†	—	—
Rooibergs	3 3*	3 0*	3 3*	3 4*	3 3*	3 6*
Rouxvilles	2 3	2 1*	2 3	—	2 1*	2 1
Ryan Nigels			3 9*	3 9*	4 0	
S.A. Alkali	18 0*	17 4½	19 3	19 6†	17 0*	15 0*
Do. Options	1 0†	1 0†	—	1 0†	—	0 9†
S.A. Lands	3 9*	3 11*		4 0*	4 0*	4 1*
S.A. Townships	9 3*	10 0†	9 3*	9 3†	9 3*	10 0†
Southern Van Ryns	4 6	4 9†	—	4 0*	4 3*	4 6†
Springs Mines	33 6	34 0	34 6	35 0*	34 9*	35 0
Sub-Nigels	11 9	11 6	11 6*	11 6*	11 6*	10 9*
Transvaal Lands	18 3	17 9*	17 9*	—	—	—
Trans. G.M. Est.	7 9*	—	7 6*	7 6*	7 9*	7 9*
Transvaal Silvers	24 6	23 6*	23 6	22 6	22 0*	22 6
Do. Options			—	—	—	0 3*
Tweefontein Colls.	22 6*	—	22 6*	22 6*	—	20 0*
Van Ryn Deeps	71 6	71 6*	71 6*	71 6*	71 6*	71 6*
Village Deeps	6 6*	7 0*	7 0*		—	7 0*
West Rand Cons.	2 6†	2 9*	2 6†	2 6†	—	—
Western Rand Est.	3 0*	3 6	3 9b	4 6	4 3b	3 6*
West Springs	12 0*	12 6*	13 0	12 9*	13 0*	12 3*
Do. Options	—	—	—	—	0 3†	—
Witbank Colls.	44 0*	44 0*	—	—	43 6*	—
Wit. Deeps	6 9*	6 9*	6 9*	6 9*	6 9*	6 9*
Wolhuters	4 0*	4 1*	4 0*	6 3	4 3	4 3
Zaaiplaats Tins	3 0*	3 1*	3 1*	3 6	3 6	3 5*
Union 5 per cent.	£99	£996	£99½*	£98¾	—	—

Concerning Mines and Men.

Sir Ernest Oppenheimer and Mr. J. S. Wetzlar, of the "C.M.S.," are on their way to South Africa.

* * * *

Mr. Wm. Taylor Heslop, mining engineer, the authority on Natal coal, has now taken up his residence at "Stonehenge," Dundee.

* * *

Mr. J. F. Grugan, who has been reporting on the Langlaagte mining property of the late M. Lebaudy, is leaving on his return to New York.

* * *

Mr. C. E. Knecht, formerly consulting engineer to the "C.M.S." group, has returned to take up practice on the Rand.

* * *

The Consolidated Goldfields deny that Mr. A. C. Holtby has resigned his position, as stated in our columns last week. Mr. Holtby has merely left on a well-deserved six months' holiday.

* * * *

Mr. J. W. Finch, Consulting Engineer to Mr. J. P. Morgan of New York, who has been visiting the Rand, leaves this week on a trip to the Congo before returning to America.

* * * *

Mr. John Wessels has resigned his position as Manager of the Robinson Deep. Mr. Wessels, it will be remembered, was President of the Mine Managers' Association before Mr. Whitehouse.

The Coal Commission's Report.

The outstanding feature of the Coal Commission's report, as summarised in this issue, is the fact that pooling is left to the option of the coalowners, and not made compulsory as the Government had originally intended. It will be noted that the Commission "recommends" pooling where possible, but goes no further. Another feature in the report, welcomed by the collieries, is that demurrage should be charged on trucks not emptied, when bins are provided. As this last will take some eighteen months, this is regarded as no more than fair. Further comments on the report are held over till our next issue.

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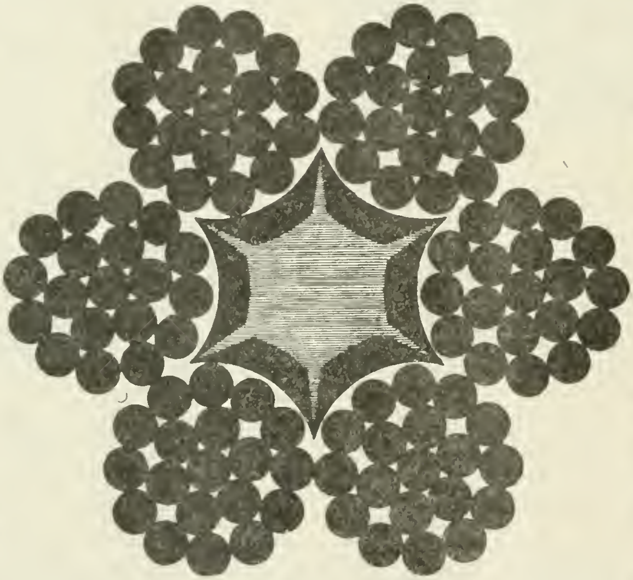

A record obtained from a "WESTGARTH PATENT CORE" ROPE used for endless haulage—
2,000 yards 4½in. cir. put to work on 24th Oct. 1914.
Taken out of work 11th June, 1917.
Coal Hauled during the period, 1,110,000 tons.

SOLE MANUFACTURERS.
"WESTGARTH
PATENT CORE"
WIRE ROPE.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—TIMBERAND BUILDING MATERIALS—OILS AND COLOURS—COAL STRIKE IN BRITAIN AND ITS EFFECTS—ELECTRICAL GOODS—UNION AND SOUTH-WEST PROTECTORATE TRADE IN 1919 AND 1920—NEW FREIGHT RATES—SHIPBUILDING SLUMP—WAGES REDUCTIONS—W.N.L.A.'s RECORD RECRUITING YEAR—WIRELESS BETWEEN BLOEMFONTEIN AND JOHANNESBURG.

General Position.

Business this week has not been at all brisk; the mines are not buying anything like their ordinary requirements; one can only assume that they are releasing their stores in anticipation of lower prices coming along. During the past few days some speculators have been selling at below cost, especially iron, hardware and oils; hence the cuts in some lines which have taken place. This reduction, however, in the opinion of reputable firms, is only a temporary phase and caused by financial pressure on weak holders. Steel plates, 1-8th and ¼, have been particularly sold down during the week. German steel plates, of which large quantities are on hand, are not in favour here, and as these goods have now to bear their place of origin, they are, whenever possible, avoided for the British manufacture, despite the difference in cost. The coal strike in Britain has now entered on its fourth week, and the prospects of an early settlement, though brighter than they were a fortnight ago, are still far from assuring. In the meantime widespread distress is being experienced on the coalfields, especially in South Wales, and great inconvenience is being caused generally throughout the country, many of the most important industrial concerns having been either partly or totally disorganised by the continued unsettled conditions. The best brains in Britain are being used to terminate the dispute; unfortunately they are opposed to people who, in many cases, seem to be deficient of any grey matter. The latest information confirms the previous pessimistic reports as to the continued loss of markets caused by the present insensate action of the coal miners. These markets, so difficult to maintain at the best of times, once lost, are, we know, very difficult to recapture. The miners (and the British workman generally) will, it is feared, receive at no distant date a very rude awakening both as regards wages and employment.

Financial.

The subscription list of the new Indian Government 7 per cent. loan of £7,500,000 was filled in London last week in five hours, thus showing in a striking manner the confidence of British financiers in India. The money market is unsettled owing to the coal strike, international politics, the impending Budget statement and tendering for Treasury Bills, and is anxiously looking forward to a reduction in the bank rate. The Bank of England selling price for three months Treasury bills was on 22nd inst. 5⅜ discount. The National Bank of South Africa will recommend the payment of a dividend for the year of 8 per cent. next June.

Iron and Steel.

Business has been very quiet this week and the value of transactions put through restricted. On the Commercial Exchange trading has been very poor, the mines continuing their hand-to-mouth buying. Steel plates have weakened during the week, and sales have occurred of ⅛ths and ¼s, at from 33s. to 35s.; barbed wire has also declined, ranging from 33s. to 34s. 6d. for 98lb.; coils to 24s. and 25s. per 68lb. Latest quotations are: Dunswart, 29s.; Union Steel Corporation, for small flats, 41s. 6d.; ordinary sizes, flats, 40s.; rounds and flats, 41s. 6d.; larger sizes, 40s.; small angles, 43s.; larger sizes, 41s. 6d.; imported iron and steel, flats, smalls, 40s. to 50s.; larger sizes, 38s. 6d. to 55s.; ¼in. rounds, iron and steel, 69s. 6d.; 5-16in., 62s. 6d.; ⅜in., iron, 58s. 6d.; steel, 41s.; 7-16in., 41s.; ½in. and ⅝in., rounds, iron, 32s. 6d.; mild steel, 43s.; ¾in. iron and steel, 42s. 6d.; ⅞in. to 2in., rounds, 39s. 6d.; larger sizes, iron, 52s. 6d.; 1in. to 3in., mild steel, 41s.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d.; larger sizes, 45s to 52s. 6d.; square, mild steel, ⅝in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and grists, 47s. 6d. to 48s. 6d.; imported angles, 42s. 6d. to 47s. 6d.; shafting, 3-16in., 1s. 2d.; ⅜in., 1s. 1½d.; 2-16in., 1s. 1d.; ⅝in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d. to 8¾d.; larger sizes, 7½d. to 8d.; spring steel flats, 8½d. to 9d. per lb.; mild steel plates, 1-16in., 40s. to 41s.; 3-16in., 39s. to 40s.; 5-16in., 35s. to 36s.; ½in., ⅜in., ⅝in., ⅞in. and 1in., 35s. to 42s. 6d.; bolts and nuts, ⅜in., 1s. 2½d. to 1s 4d. per lb.; ½in., 77s. 6d. per 100lb.; ⅝in., 66s.; ¾in., 64s.; nuts, ⅜in. and ¾in., 87s. 6d.; fish plates, bolts and nuts, ⅜in., ¼in., ½in., 9½d. per lb.; ⅝in., 72s. 6d.; ¾in., 68s. 6d. per 100lb.; doz. spikes, 43s. per 100lb.; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d.; ½in., 64s.; ⅝in., 60s. 6d. per 100lb.; tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜in., round, 1s. 10d.; ½in., 1s. 8d.; ⅝in. and upwards, 1s. 6d. per lb.; ½in., 1s. 9d.; ⅝in. and upwards, 1s. 7d.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 6d. per lb.; drill steel, 7½d.; hollow, 1s. 0½d.; wire nails, 42s. 6d. to 57s. 6d.; shovels, 65s. to 70s.; wheelbarrows, 60s. to 65s.; picks, 45s. to 75s.; pick handles, 35s.; fencing wire, 30s. to 50s.; screening, 3s. to 10s. per square yard; cyanide for outside mines rules at 1s. 6d. per lb.; zinc shavings about 1s. per lb.; galvanised iron piping, ½in., 6d. per foot. Prices for piping and fittings are somewhat easier; there is a fair demand, especially for second-hand piping, of which stocks are not too plentiful.

We are given to understand that the Pretoria Iron Works have closed down for an indefinite period.

Engineering Shops.

We are informed that several engineering shops have this week laid off a number of workers, consisting of moulders, patternmakers, turners and fitters; orders are decidedly on the lean side, and, in view of present conditions, no improvement is expected for some little time. An expert said that, judging from present indications in the hitherto producing countries—England, America and Europe generally—an idea was spreading here that we should not be able in future to import our requirements in the same free and easy style as before the War. The community generally, he said, had the impression that we could get into the importing groove again at the very latest a few years after the readjustment of the chaotic conditions caused by the War; but, as Lloyd George said recently, it appears that the great danger to those countries lies more in the present and future trade union movements than in the dislocation caused by the War; so that South Africa is perforce beginning to face the problem of producing what she can locally without relying upon importations, which will, ultimately, of course, benefit the country. The exchange conditions in America are prohibitive and keeping her at present from competing. Our national slogan should be South Africa first, second, and all the time, without any admixture of politics, and then the Union would go ahead by leaps and bounds.

Over 170,000 workers in the engineering and ironfounding trade in Britain are, it is reported, unemployed.

One of the directors of the Newcastle Iron and Steel Works has just returned from a visit of inspection to the scene of the company's operations, and in the course of conversation, he stated that great strides had been made since he was there a few months ago. The erection and installation of the blast furnaces and plant is now nearing completion, and he thinks that the furnace will be blown in about August or September next, but, in any case, he is assured that the company will be producing pig iron during the latter month. He said it was surprising and, unless one had visited the works, even incredible, the amount of machinery and plant which had been erected with so little capital, including a number of buildings, comprising single quarters, offices, chemical laboratories, etc. The brick plant also has recently been enlarged, so that the output has been almost doubled. The company is further erecting a plant of their own for the manufacture of fire bricks, the fire clay being obtained within a few miles from Newcastle, and both the fire bricks and ordinary building bricks have been most favourably commented upon. The company have had very favourable offers to purchase all the building bricks they can supply, and more. It is, he said, really amazing the amount of work which has been done in such a short time. The company have received inquiries for pig iron from South America and Mediterranean ports, and, of course, numerous inquiries from all parts of South Africa. The prospects for this new industry were never more promising.

Timber and Building Materials.

Business this week has been dull and inactive and prices for timber generally have declined slightly. Deals, 3 x 9, and scantlings rule at 1s. 6d. to 1s. 6½d.; floorings, 9½d. to 9¾d.; ceilings, 7d. to 7¼d.; beaver board, 5d.; oregon, 9s. to 9s. 6d.; pitch pine, 10s. 6d. a cube; corrugated iron, 24 gauge, 10½d. to 1s. 0½d.; furniture woods, Japanese oak, 1in. to 2in., 1s. 9½d. to 1s. 10½d. per square foot; Burma teak, best, 21s. 6d. at the coast; seconds, 20s. free on rail; American oak, 1in. to 3in., 1s. 6d. to 1s. 8d. per square foot at the coast; American black walnut, 1in. to 4in., 1s. 8d. per super foot, free on rail Capetown; West African mahogany, 1in. and thicker, 2s. 2d. to 2s. 3d. per square foot, free on rail Durban; 3-ply ash, 5m.m., 10d. to 10½d. per square foot; stock bricks are 70s.; mixed bricks, 60s.; wire cuts, £4 10s. to £5; pressed bricks, £5 per 1,000 at yard; blue lime, 1s. 3d.; white lime, 7s.; finest unslaked, 10s. 6d. per 180lb.; plaster lime, 5s. 3d.; cement, 11s. 6d. per bag; damp, course, and roofing, 1-ply, 40s.; 2-ply, 52s. 6d.; 3-ply, 65s. Very little building comparatively is going on now, and business consequently is slow, and has been during the past fortnight. Stocks of timber on hand and arriving from the Baltic are satisfactory.

Business is very quiet in the second-hand iron and timber yards, which, however, are now filling up again with material, and do not present the bare appearance of some months ago. The price for timber is 1s. 2d. and iron 6d. to 8d.; casements from 9s. to 25s.; doors, new, 35s. and upwards; mouldings from 2½d.

Town Council's Housing Scheme.

This now seems to be assuming definite shape, and it is not unlikely that within a few weeks the building will be commenced of 600 houses, to be followed later by a further 600. The Parks and Estates Committee's report on the matter came before the Town Council yesterday.

Cabinetmakers' Strike in Capetown.

The men have submitted fresh proposals, as follows: A 44-hour week, with a reduction in wages of from 5 per cent. for the lower paid men to 12½ per cent. for the higher paid workers, which proposals the manufacturers have declined.

Oils and Colours.

White lead in oil, small sizes, 1s. per lb.; 57s. 6d. per 50lb. kegs; English red lead, 1s. per lb. in 6¼lb., 12½lb. and 25lb. kegs; 11d. per lb. in 50lb. kegs; dry white lead, 1s. per lb.; linseed oils, raw or boiled, small bot., 2s. each; 7lb. tins 10s. each; 4 imperial gallons, 47s. 6d.; spirits of turpentine, small bot., 3s. each, 17s. 6d. per 83 imp. gall.; turpentine substitute, 9s. 6d. per tin, each 5-16 imperial gallon; finest oxide in oil, red, 55s. and 65s. per 100lb.; 50lb., 32s. 6d.; 25lb., 16s. 6d.; 12½lb., 9s.; 6¼lb., 5s.; finest English putty, 8½d. per lb. in bladders; colours, ground in oil, 1s. 6d. to 5s. 6d. lb.; dry colours, finest quality, 6d. to 2s. 6d. lb.; colours, ground in water, 1s. to 2s. lb.; ground in turpentine, 3s. 6d. to 11s. lb.; motor colours, ground in gold size, 3s. 6d. to 6s. 6d. lb. Realy mixed paints, 1s .6d. lb. in 70 lb. drums; signal red, 2s. 6d. lb., leadless flat wall paint, white, for use on steel and other ceilings, 32s. 6d. per 5-6 imp. gall., 37s. 6d. per Imp. gall.; roof; paints,, 1s. 6d. lb., 70 lb. drum, 85s.; varnishes, Imp. gall., 27s. 6d. to 47s.; alum, in powder, 9d. per lb.; creosote, 1s. 6d. per 5-6th Imp. gall. tin; gum arabic, 3s. 6d. lb.; common glue, 1s. 3d.; good quality, 1s. 9d.; finest Russian, 2s. lb.; English gold leaf, plain, 1s. 6d. per book, transferred, 5s. per book; aluminium leaf, plain, 1s. 9d. per book, transparent, 2s. 6d. per book; wallpapers and wall decorations, 2s. 9d. to 21s. per roll.

Some Results of the Coal Strike in Britain.

The works of the North-Western Railway at Crewe were closed last week. The Great Eastern Railway is suspending its suburban services on Sundays, and other companies announce drastic reductions in running.

Tramway services are being reduced, with temporary suspension during certain hours of the day.

The London tubes will close earlier, while many stations will open later and close earlier.

The big companies are taking off main line trains while the expresses will run only twice weekly.

The Ministry of Labour reports that since the commencement of the coal dispute an alarming increase in unemployment has occurred in Britain; there are now nearly 1,700,000 people drawing unemployment benefit, compared with 1,500,000 on April 1st, while the number of short-timers has risen during the present month by nearly 200,000.

Mr. Bridgeman, Secretary for Mines, states that the coal miners' wages in 1913 amounted to 90 millions sterling and the profits to 21 millions sterling; last year the wages amounted to 264¾ millions and the profits to 27 millions.

German Coal at Swansea.

German coal, it is reported, is being offered at Swansea at 33s. 6d. per ton c.i.f., which is approximately half the present cost of best Welsh coal.

Electrical Goods.

Business remains inactive; the Municipality is not putting in new installations and building operations are on a very restricted scale; the only work now going on is the usual repairing jobs; the orders from other parts of the Union are of the poorest description. Prices are unchanged at present, but it is generally thought that a lower level will soon be seen. A curious phase of the electrical material business now is the sending out of samples for shades and similar articles, which practice did not obtain before the War. With one or two exceptions stocks are abundant and show a marked difference in their prices as compared with British.

Oil.

It is reported that as a result of prospecting on the farm Keeauwkop, in the district of Boshof, fourteen miles from Kimberley, indications of oil have been discovered, which upon analysis of samples taken at a depth of 192 ft. are said to contain petroleum or shale oil. The syndicate which has the matter in hand are going to thoroughly test the proposition, as well as other adjoining farms on which traces of oil have been discovered.

"Pegasus" Petrol.

Shipments of this have now arrived and full deliveries are now being resumed.

British South Africa's Trade for 1919 and 1920.

The total exports for 1919 and 1920 were £203,972,441. Deducting from this the total imports, £159,045,719, it will be seen that the balance of trade in favour of South Africa for the two years is £44,926,722. Had shipments of gold in 1919 been normal, the balance would still have been largely in South Africa's favour in spite of the unprecedented importations in 1920, when oversea manufacturers poured outstanding orders into the Union at top prices. The anticipated decline in imports has already set in, and is likely to last for some months, when a revival of trade on a more stable basis should be witnessed. The total imports into the Union during 1920 were £105,927,107, compared with £53,118,612 for 1919. The average oversea value per shipping ton of cargo imported was £45·5 in 1920, £39·66 in 1919, and £16·20 in 1914. The imports for 1920 amounted to £93,404,962 and for 1919 £46,712,795, or an advance of 100 per cent. last year. The largest increases were: Boots and shoes, £1,826,000; wearing apparel, £4,842,000; cotton piece goods, £2,245,000; wheat, £2,391,000; wheaten flour, £1,578,000; galvanised and corrugated iron, £1,057,000; motor cars, £1,826,000; wood, unmanufactured, £1,376,000; woollen cloth and piece goods, £1,214,000. Put in another way, we find the following increases: Building material, £3,008,000; agricultural implements, £1,539,000; soft goods, £12,805,000; foodstuffs, £8,247,000. Boots and shoes imported numbered 4,091,273 pairs, valued at £3,295,297; motor cars 2,661 warehoused during 1920, of which only 775 were cleared; in 1919 341 were warehoused and cleared—which explains the present glut in the motor trade. The total value of foodstuffs and liquors imported in 1920 was £13,099,189, as against £4,851,859 for 1919. The total value of railway material imported last year by the Government was £4,913,673. The total value of exports from the Union for 1920 was £83,632,844, as compared with £99,818,536 for 1919, which, after deducting the value of bullion gold shipped, shows a decrease for 1920 of £4,061,593. Coal bunkered and exported rose from 2,519,390 tons to 3,153,935 tons.

The South-West Protectorate's Trade for 1919 and 1920.

In 1919 goods exported were valued at £1,284,302; last year the figure was £5,305,978, of which trade more than four-fifths was done through the Union. The diamond export was £4,265,294 and the copper export £645,680. Imports amounted to £2,129,247, against £1,135,116 in 1919. The South African produce imported by the Protectorate was valued at £645,084, against £449,915 in 1919. The largest direct importation from oversea was from Germany, valued at £185,166, the United Kingdom being next with £74,421, and the United States third with £22,973.

New Freight Rates.

Shippers in the South African trade, with a view to avoid shipment of cargoes being deferred until the new freight rates are definitely agreed upon, are giving the assurance that the cargoes shipped after April 23 will secure the advantage of the new rates, which were expected to be announced this week. The promised reductions are said to be appreciable, ranging in some cases from 60s. to 90s. per ton. Those rebates are necessitated by the Continental competition.

Wages Reductions.

Shipowners have inaugurated a reduction of pay by 50s. per month on monthly vessels and 8s. per week on weekly vessels, such reductions to come into operation on May 6th.

The American and Canadian paper-making industry is in a parlous way on account of the rejection by the employees of the employers' proposal to reduce wages by 30 per cent. and substitute a nine hour instead of an eight hour working day. It is feared that fifty mills will close down early next month when the present agreements expire. Such a stoppage would seriously affect the newspaper printing and publishing houses of North America.

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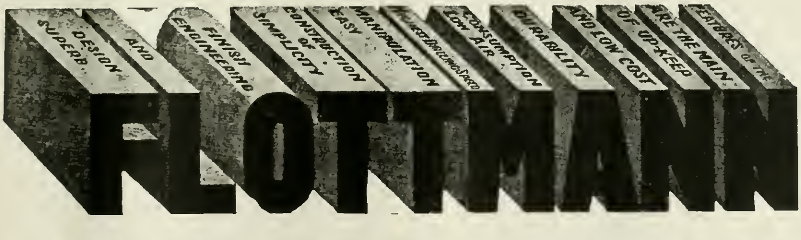

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The Week's Meetings.

TRANSVAL SILVER BASE METALS.

Special Meeting.

An Extraordinary General Meeting of the Shareholders of the Transvaal Silver and Base Metals was held at General Mining Buildings, Johannesburg, on Thursday the 21st day of April, 1921.

Sir George Albu, the Chairman of the Company, presided, and in explaining the object of the Meeting said:

This Meeting has been called in order to lay before you, for your approval, particulars of a provisional agreement with the General Mining & Finince Corporation, Ltd., which has been entered into by your Board of Directors with the object of providing funds, by an increase of capital, for the further exploitation and equipment of your property. The scheme embodied in this agreement is described in the Notice which has just been read by the Secretary. In bringing this proposition before you, I wish in the first place to deal briefly with the finances of the Company. As you are aware, the original Working Capital of the Company was £35,000.

The exercise of the options towards the end of last year provided an additional amount of £87,400. Before the options were exercised all the original capital of the Company had been expended and advances made to the Company by the General Mining and Finance Corporation, Ltd, amounted to £61,702 12s. 6d., so that after repayment of this amount only £25,697 7s. 6d. was left, which, of course, was quite inadequate to carry out the programme of capital expenditure necessary to develop and equip your property. To bring the position up to date, according to the latest available figures, the total expenditure incurred by the Company amounts to £154,897 5s. 11d. As the working Capital provided, including the exercise of the options, was only £122,400, you will see that it was again necessary to obtain financial assistance, and this was readily granted by the General Mining and Finance Corporation, Ltd., with the result that your Company is at present indebted to them for the sum of £33,884 12s. 6d., leaving the Company with £1,387 6s. 7d. cash on hand. At the last Annual General Meeting this position was foreshadowed, and the scheme now before you is, in the opinion of the Directors, the best method which can be devised for the financing of the Company under the present unfortunate conditions of financial stringency.

The Scheme Explained.

The proposition before you entails the creation of 160,080 new shares of £1 each, the whole issue being guaranteed by the General Mining and Finance Corporation Shareholders are offered one share for each share held, and all shares of the new issue not applied for by shareholders will be subscribed for by the General Mining and Finance Corporation, Ltd., in accordance with the provisional agreement which has been lying at this office for your inspection, and with the terms of which your are no doubt familiar.

The provision of this extra capital will provide sufficient funds to carry out the programme of Shaft Sinking, Development and Equipment indicated to you at the last Annual Meeting, which is necessary to bring your mine to the producing stage.

The Mining Aspect.

Turning to the technical aspect of your Company's affairs, work since the date of the Annual Meeting held on the 23rd December last, has consisted of carrying out an active policy of development on the main lode of Dwarsfontein; getting ready for development of the Brakfontein lode; prospecting the mineral occurrences on Boschpoort, and preparing the lay-out for the new concentration and smelting plant. So far as the development programme on the Main lode is concerned, the total footage accomplished during the quarter is 2,610 feet, of which 2,095 feet were on the lode. Sampling results are not available for the entire footage, since, pending completion of our Assay Office on the property, all the samples have to be forwarded to Johannesburg for assay. However, the results of sampling 1,890 feet are available, and, of this distance, 830 feet show payable values, viz., 13 per cent. lead and 11.6 ozs. silver, and 1,060 feet show unpayable values, viz., 1.7 per cent. lead and 1.5 ozs. silver. These figures are given in the Quarterly Report, but, since this report has only just been printed and will not yet have reached all of you, I consider it advisable to repeat them here. At first sight, it may appear the proportion of payability, at 14 per cent., is somewhat low. This is accounted for by the bulk of the driving at No. 2 Mine having been in the low-grade zone between the rich shoots proved by the surface winzes. In this connection, it is encouraging to note that, even in the zone of low value opened up by the drives, the rises and winzes, from which stoping will be carried out in this area, have shown that ore of high grade exists between the 1st level and surface and the 1st and 2nd levels, respectively.

The No. 1 Mine.

At the No. 1 Mine, the grade of the ore developed has been, generally speaking, most satisfactory, particularly in regard to the Western extension of the workings. It has not been found possible, as yet, to commence development at the plane of the 3rd level, owing to the debris which has to be removed therefrom, but, in order to test this ground, and render it available for stoping within a short period, four winzes are being sunk from the 2nd level to connect with the present 3rd level and its extensions. It is most encouraging to note that, of these four winzes, three have shown consistently good values, and that the fourth, which was unpayable at the start, is beginning to exhibit signs of improvement.

The total quantity of ore fully and partially developed, at the 31st March last, was approximately 124,000 tons, which may be classified as follows:—

Fully developed payable 67,439 tons valued at 11.0 per cent. lead and 10.5 per cent. silver over 41 inches.

Fully developed unpayable 2,595 tons valued at 1.8 per cent. lead and 2.1 ozs Silver.

Not yet valued, 51,500 tons.

You will notice that a substantial proportion of the ore developed has yet to be valued. This is due, partly, to certain blocks of ore above the 1st level and between the 2nd and 3rd levels being, as yet, inaccessible to the samplers, and, partly, to the winzes and rises in other blocks being only partially completed.

From the figures which I have just given, you will see that the intrinsic value of the fully developed and payable ore, at present prices, viz., £20 per ton for lead and 3s. per oz. for silver, is 75s. 6d. per ton (without sorting, which should materially enhance the value of the ore treated) or, in other words, that the metal contents of the 67,439 tons mentioned is slightly over £250,000. This, of course, takes no account of the ore, amounting to 54,500 tons, which has not yet been valued.

These results must be considered highly satisfactory, particularly when it is remembered that the bulk of the fully developed ore, represents what is virtually the leavings of the old mine, and it is even more satisfactory to know that no less than 95 per cent of the ore left behind in earlier days is payable under present conditions.

The Brakfontein Lode.

As regards the Brakfontein Lode, it was mentioned at the last meeting that it had been decided to commence development at this point. With this object in view, a small compressor, steam hoist and two loco. boilers have been erected at the site of the Brakfontein Shaft. The workings of the old mine have been unwatered to a depth of approximately, 50 feet, and the shaft itself has been opened out to three compartments and timbered for 48 feet. A strong flow of water has been encountered, which is being handled effectually by means of an air-lift supplemented by pumping. At the start, the flow of water was in the neighbourhood of 700,000 gallons per 24 hours, but, recently, due no doubt to the constant unwatering operations which have been carried out, the quantity has substantially decreased. While work in the shaft is proceeding, four winzes are being sunk on the ouctrop of the lode, and, although sinking has been retarded to some extent by the very heavy rains which have fallen recently in the district these winzes have attained depths varying from 30 to 50 feet. Ore of good value has been proved in the oxidised zone through which the winzes are now being sunk.

In regard to the prospecting operations on Boschpoort, the outcrop of the lode has been proved for a distance of some 800 feet, and winzes have been sunk to test its value in depth. Good carbonate ore has been proved in these winzes, but, at the present time, owing to the very heavy rains which have occurred, prospecting operations at this point have been suspended.

The Question of the Plant.

I now come to the question of the Concentration and Smelting Plant. The new furnace, which was ordered from England, has been delivered on the property, and excavations for the foundations have been commenced. Word has just been received that the converters have arrived at Delagoa Bay, so that they also should be available in the near future. As soon as the furnace and converters have been erected, which should be by July next, it is proposed to commence smelting operations with the hand-picked ore recovered from development, a considerable quantity of which has been accumulated at surface. In the meantime, the lay-out for the Concentration Plant has been decided upon. The bulk of this plant can be obtained locally, and orders already have been placed for those portions which have to be imported. So far as the Power Plant is concerned, one of the electric generators has been delivered on the property, and the second generator and additional boiler, which will be required, have been purchased locally and are now being dismantled for transport Given reasonable deliveries of the items of plant ordered from Europe, the new Concentration Plant should be in operation by about October next. In the design and general lay-out of the plant, we have had the benefit of the advice of Dr Heberlein, who has arrived in the country for this purpose. Acting on his suggestions, it has been decided to add to the smelting plant by the erection of a second furnace, the two together, allowing for stoppages and delays, having a capacity of 750 tons of bullion per month. This represents a quantity of ore, which, with comparatively little alteration to the original design, the Concentration Plant has been arranged to supply. It is not to be expected that the above tonnage of bullion will be obtained from the commencement of operations. To start with, when smelting hand-picked ore, the monthly output of bullion should be in the neighbourhood of 300 tons per month. When the Concentration Plant and second furnace start, it should be possible to increase the output, as mentioned in the Quarterly Report, to approximately, 500 tons per month, and still later, after minor additions to the de-sulphurising plant, the capacity will be brought up to 750 tons of bullion per month.

Since Dr. Heberlein's arrival, he has carried out a close inquiry into local conditions, and, as a result of his investigations, he is of opinion that the cost of production, transport, freight and realization of the bullion should amount, approximately, to £21 per long ton. At to-day's prices of the metals, the value of this bullion would be in the neighbourhood of £35 per ton, so you will see that, according to Dr. Heberlein's figures, a substantial margin exists between the value of the product and the cost of production.

Metal Prices.

You will have noticed that, since our last meeting, the market prices of both lead and silver have experienced substantial decreases, although recent quotations have shown an improvement. In the present state of the world, and the existing attitude of labour in Europe this is scarcely surprising, since it appears evident that, in many directions industrial progress is at a standstill, with a resultant slackening in the demand for metals. As a consequence, the stocks of lead which were being held against higher prices, have been thrown upon a market already overloaded with the metal, and the price has suffered accordingly. With a revival in trade it seems almost certain that the prices of metals will advance. One has only to turn to the mining papers from other parts of the world to see that it is impossible for the present position to continue, since the existing price of lead is actually below the cost of production in most instances. In our own case, due to the high proportion of silver in the ore, this does not apply, and, as already indicated, even the present low prices show a very satisfactory profit on working.

Now, gentlemen, having put all these considerations before you, I beg to move the following Resolutions :—

(1) That the Provisional Agreement entered into between the Board of Directors of this Company, of the one part, and the General Mining and Finance Corporation, Limited, of the other part, whereby it is provided, *inter alia*, that the Company shall increase its Capital from £139,920 to £300,000 by the creation of 160,080 shares of one pound each, be and the same is hereby ratified, confirmed and adopted, and that the Board of Directors of the Company are authorised and empowered to carry same into effect

(2) That the Capital of the Company be, and the same is hereby increased from £139,920, divided into 139,920 shares of one pound each, to £300,000, divided into 300,000 shares of one pound each, by the creation of 160,080 new shares of the nominal value of one pound each.

Mr. C. E. Farquharson seconded, and the Chairman then announced that the matter was open for discussion, and invited shareholders to ask any questions they might desire to do in connection therewith.

Several shareholders availed themselves of this invitation, and the various points raised were replied to by the Chairman or by Mr. Erroll Hay, the Technical Adviser.

The Chairman then put the Resolutions to the Meeting, which were carried unanimously.

The Chairman thereupon announced that it had been arranged by the Board, in the event of the Resolutions being approved of by shareholders, that, in terms of the Notice convening the Meeting, shareholders registered as such on the 2nd May should have the right to apply for the new shares up to the 9th day of May next.

WEEK IN MINING AND ENGINEERING TRADES.—(Continued).

Shipbuilding Slump.

The present slump it appears is the worst ever experienced; owing to the industrial stagnation in Britain it is announced that over 900 British vessels, of an aggregate tonnage of over 2,000,000, have been laid up. There are said to be 56,000 workers in the shipbuilding centres out of employment. It is computed that several hundreds of thousands of pounds have been diverted from Britain to foreign pockets in respect of ship repairs alone.

Native Labour Association: Record Recruiting.

Mr. Sam Evans, in presiding at the annual meeting of the W.N.L.A. during the week, was able to report that a record number of natives had been recruited during the year; no fewer than 53,650 East Coast natives had been obtained as compared with 47,985 in 1915, the previous record year; which speaks volumes for the Association's efficient organisation. The cost, it was stated, per recruited shift was 3·5 pence in 1920 as compared with 3·63 pence in 1915.

South African Exhibition in Amsterdam.

Mr. Canham (Trade Commissioner) states that between 8,000 and 9,000 trade inquiries had been received by the Union officials at Amsterdam during the time of the Exhibition, of which, he believed, a large percentage would result in definite business. South Africa is to be represented in forthcoming shows in London at the end of this month and end of October, at Bristol at the end of May, and at Derby at the end of June.

Wireless Messages Between Bloemfontein and Johannesburg.

Some interesting experiments have lately been proceeding between the above centres, both telephonic and telegraphic, over a wireless installation erected on Naval Hill. The transmission is in continuous waves by means of the Andian valve instead of the usual sparking system. The experiments have been of a very satisfactory nature, both as regards facility, speed and accuracy, and the hope is expressed that this may be the precursor of a regular chain of inland stations for the Union. A great saving is expected of expense in telegraph construction and greater acceleration of the service by the adoption of the new wireless system.

Latest Rooiberg Results.

Taking the average price per ton of metallic tin at £150 7s., Rooiberg made a loss on working during last quarter of £2,650. Owing to the position brought about by the rapid decline in the price of tin, the directors deemed it imperative to curtail expenditure at the mine. All work was accordingly suspended temporarily on the farm Weynek; and boring by shot drill discontinued. The white and native labour complement was, at the same time, reduced and economies effected wherever possible. The total ore accumulated at 31st March, 1921, exclusive of 2,127 tons transferred from the farm Blaauwbank, was estimated to be 6,594 short tons. The mill, which was hung up on the 6th November owing to transport difficulties, was re-started on 1st January, 1921, and is running satisfactorily. Very good results were obtained from the alluvial during the quarter, due to improvements effected on the plant, and an increase in the running time.

* * * *

Engineering Progress in the Congo.

Plans for railway construction in the Belgian Congo are stated to include the following: Partial reconstruction of the railway from Matadi to Leopoldville; estimated cost, 100,000,000f. Extension of the Katanga railway towards the north from Bukama to a less obstructed portion of the Lualaba; cost 30,000,000f. Construction of the first Belgian portion of the Benguella railway, 20,000,000f. Increase of railway material on the Great Lakes Railway, etc., 25,000,000f. Improvement of the Mayumbe railway and equipment, and also of the port of Bomba, 8,000,000f.

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Established 1891.

Vol XXXI., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 7, 1921. No. 1545.

The New Modder.

At the New Modder towards the end of April an additional eight Nissen Stamps, with necessary treatment plant, were brought into operation.

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The Issuing of Stores Underground.

We are indebted to Mr. Hill, the Manager of the Modder Deep, for the following article describing an interesting underground innovation. Plainly the scheme has considerable possibilities and may be extensively adopted on the Rand. We hope in our next issue to reproduce a photograph of the Modder Deep underground storeroom, which, though promised, had not come to hand at time of going to press.

On the Modder Deep all stores required underground are issued from a store located at the main station, and below are given the reasons for introducing this method

The question of reducing the quantity of stores used drew attention to the following factors:—

1. Method of issuing.
2. Quantities issued.
3. Recording the issues.

Previous to the introduction of the underground store all requisitions were made out by the men on the surface and initialled by the Mine Captain of the section. In the limited time available before the shift went down it was impossible for the official concerned to inquire closely into the details of the quantities ordered by each individual.

Time and Labour Saved.

Each man went across to the store to draw his supplies. In consequence men were sometimes late in gettitng down, in any case it was invariably the reason given for missing the cage. To carry his stores over, one or more natives were kept on the surface. Bulky articles were sent down after the shift went down, involving a wait at the station and a possible loss in transit, for instance a contractor would lose a tin of oil, or a tracklayer a bag of bolts. This is understandable when it is borne in mind that there is only one shaft station at which everything is off-loaded.

Many stores were requisitioned for in bulk. It meant making out fewer requisitions, as for instance in case of pipe fittings. In the case of dog spikes, bolts, etc., it was clearly inpracticable to weigh out small quantities daily.

There was a constant tendency on the part of the workman to accumulate stores underground. Some men have a mania for doing this, but it became more or less general during the war period. Supplies to the mines were erratic, shortages occurred periodically, and each man, so to speak, tried to see that he was not caught napping.

The underground store does not need much in the way of description. It consists of a walled-off portion of the pump chamber, is equipped with racks and cupboards on similar lines to the surface store, with the addition of bins for plugs and wedges.

The System of Issuing.

The system of issuing is as follows:—

All requisitions are made out by the men underground at whatever time they find it necessary. Only sufficient stores necessary to do the day's work are issued, for instance, bolts, dogspikes, etc., are issued in quantities and not by weight.

The store being open from 7 to 8.30 a.m. and from 12 noon to 1 p.m., any shortage in the morning issue can be made up at noon. The requisitions are initialled by the shift boss, the official directly in charge of the work to be done. The accumulation of stores in the men's boxes is absolutely prohibited.

Losses in transit are entirely eliminated.

In addition to the ordinary stores a supply is stocked of certain articles made in the workshops.

Instead of Mine Captains having these made, perhaps to their own design, and naturally involving a certain amount of delay, they have been standardised and are always available. These comprise such articles as pipe hooks, eye bolts, punches, chisels, etc. A constant supply is available of sharpened pinch bars and saws, which are issued in exchange for blunted ones, and not, as in the case of stores, requisitioned for.

Spare machines and machine spares are stocked and exchanged, but for obvious reasons, only on presentation of a signed note

Disinfectant previously issued in drums, is stored outside the store in a tank. It is diluted to the correct strength for use and is available at all times day or night.

Insertion for pipe joints is supplied in the different sizes required and not in lengths as previously done.

Standardisation of stores and fittings is easily enforced by the simple process of stocking only the stores prescribed. for example, no elbows are carried in stock.

The Chief Storekeeper's work is considerably simplified. The probable consumption for the month can be fairly accurately estimated, resulting in a large decrease in the item "stores in hand," in his accounts.

A conspicuous result of the new method, perhaps not directly connected with the question of the consumption of stores, is the total absence of native labourers on the bank when the shift goes down.

The Clerical Side.

The clerical work done is as follows:—

Daily.

1. At 2 p.m. each day the Storekeeper hands over to each Mine Captain for signature the requisitions initialled by their shift bosses, enabling the former, should he find it necessary, to interrogate the shift bosses or the workmen concerned when they come off shift.

2. A sheet showing the total stores used daily in each Mine Captain's section is handed to the Underground Manager.

3. A daily record showing progressive totals is kept posted of all stores used.

Monthly.

4. A record is kept in book form of all stores issued to each individual.

5. The daily average consumption for each month is kept posted. Comparison of sheet 3 and sheet 5 shows up instantly any undue consumption of stores at any time of the month. Reference to book 4 makes it simple to locate the individual concerned.

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Mine Ventilation.

By E. C. RANSON (METALLIFEROUS AND COLLIERY MANAGER'S CERTIFICATES, MINING KING'S MEDALIST).

I think it is universally acknowledged that what is wanted probably more than anything else at the present time in the mines of the Witwatersrand, especially the deep level workings, is adequate ventilation. There is no mistaking the fact that very real progress has been made in preventing the making of dust during working operations underground. If the regulations laid down in the Mines Act are religiously carried out, the amount of dust produced during working hours should be reduced to the very minimum. The time when dust is created is blasting time, the whole atmosphere of the mine becoming impregnated with dust and fumes. This is where a good current of air in the working places serves one useful purpose; it drives the dust and fumes out of the mine, and leaves it in the state as immediately before blasting—a more or less pure atmosphere.

Another Problem.

Whilst we are producing this very excellent state of affairs, as far as dust is concerned, by the free use of water, we are creating conditions undesirable in other ways. We find that in the deep level workings, the working places are very warm and practically saturated; in other words, we have maximum heat and maximum moisture, the worst possible working conditions. It has been conclusively proved that a man's vitality is seriously impaired under such conditions, his efficiency drops very appreciably, and it becomes a permanent menace to his health, just as much so as dust. We are thus face to face with a new problem, and the solution to that problem is adequate ventilation, not only an adequate amount of air passing down the downcast shaft, but so distributed throughout the mine that every working place gets its requirements.

Unlike the practice on the collieries in England, mine ventilation has not been looked upon as of prime importance on these fields, but it is going to play just as important a part on these mines as on the collieries at Home. Owing to its having been a subject of relatively minor importance, mining students in this country have possibly not given the subject the attention that is bestowed upon it at Home. As it is desirable that all underground officials should have a knowledge of both the theory and practice of mine ventilation, I propose dealing with each in turn.

The theory of centrifugal ventilators and ventilation generally is such a vast subject, it is beyond the scope of this article to treat it fully. I will be as concise as possible, and touch only on the more important points. As fan ventilation is practically universal on mines now, and the exhausting type most in favour, I will deal with this method only.

Difference of Pressure.

In a mine we must have at least one downcast shaft, through which the fresh air passes to the workings, and one upcast shaft, through which it finds its way back to the surface after having done its work. To produce a current of air we must create a difference of pressure in the two shafts. Placing an exhausting fan at the top of the upcast shaft is one method of doing this. I might say, in passing, that the top of the upcast shaft, or, in other words, the end of the circuit, is the only place for the main ventilating fan. I hope to show later on that the placing of the fan in any other part of the circuit is bad mining practice. An exhausting fan works against the outside atmosphere, the air behind such a fan expands, and is reduced in density, producing a ventilation which is "depressive," as against a "compressive" system in the case of a blowing fan. When the fan is running, it tends to create a vacuum, or region of low pressure round about its centre. This explains the depression created by the fan, such depression being expressed in terms of feet of motive column, or ventilating pressure in lbs. per square foot as registered on the water gauge, being the difference in pressure between the outlet and inlet sides of the fan.

Now to explain a little more clearly what is meant by motive column and ventilating pressure, and their relation one to another. As previously mentioned, when the fan is running, there is a difference in density between the air in the downcast and upcast shafts, the downcast column, or the whole of the air in the downcast shaft being heavier than the upcast column. The difference in weight between the two being the "motive column," and is expressed as so many feet of air column, whose cross-section is one square foot and whose density is the same as the downcast air. Supposing, for argument's sake, the difference in weight of the downcast and upcast columns of air is 26lbs., the height of the motive column to balance this difference in weight will be:—

$$\frac{26}{0.08} = 325 \text{ feet.}$$

(1 cu. ft. of air at normal pressure and temperature = ·08lb.)

In the above example, the height of motive column producing ventilation is 325 feet, which exerts a pressure of 26 lbs. per square foot, which is the ventilating pressure in lbs. per square foot. This 26lbs. per square foot may be expressed as $\frac{26}{5 \cdot 2} = 5$in. of water gauge.

Now to explain the Water Gauge, its position and function. It consists of an ordinary U tube, the legs of which are eight or nine inches long. The tube is about half filled with water, and a movable scale is fixed between the legs, so that the difference between the heights of the water columns can be ascertained. The gauge is fixed in the fan chamber about six feet from the fan inlet, away from the eddy of the air at that point. One leg is open to the air in the chamber, or the inlet side of the fan, the other leg being connected to the atmosphere, or outlet side of the fan by means of a length of 3/8in. pipe. The atmosphere having the greater pressure, depresses the water in the leg, the difference in height between the two legs being read off on the scale as so many inches of water gauge. An inch of water gauge represents a ventilating pressure of 5·2 lbs. per square foot. It may not be quite apparent how the 5·2 lbs. is arrived at; it is easily explained. A cubic foot of water weighs 62·5 lbs, so that a column of water one inch in height and an area of one square foot weighs $\frac{62 \cdot 5}{12} = 5 \cdot 2$ lbs.

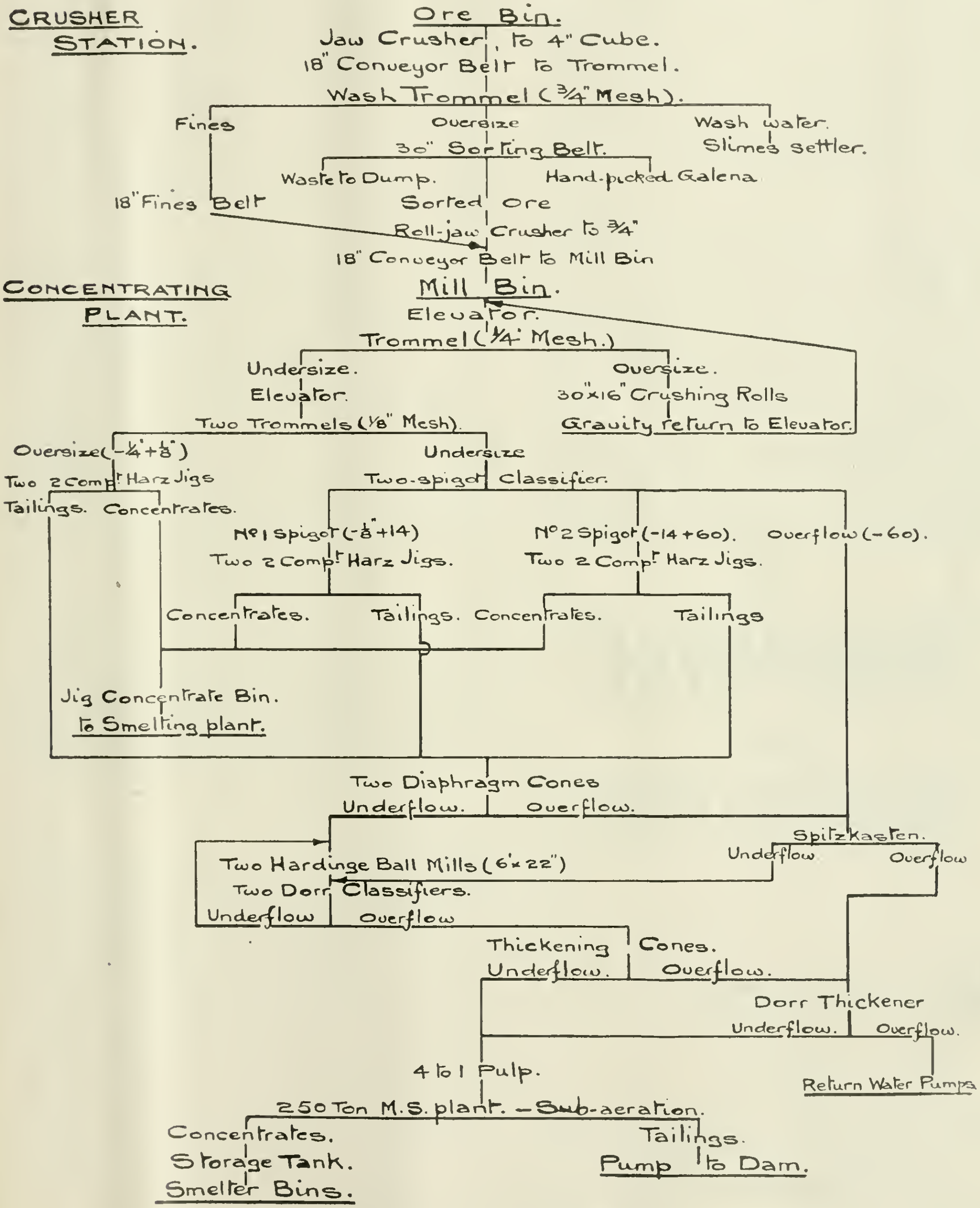
An approximate rule for determining the motive column is to multiply the water gauge reading in inches by 68. 13 cubic feet of air weigh approximately 1 lb., therefore for 1 inch of water gauge, which equals a pressure of 5·2 lbs. per square foot, the motive column is 13 × 5·2 = 68. I propose now to go a little further into the theory of centrifugal ventilators. By the well-known Guibal theory, with a perfect fan, the velocity of discharge air is twice the tangential speed of that fan, so that the depression or motive column of such a fan would be double the height through which a body would have to fall to acquire a velocity equal to the tangential velocity of the fan. Such depression is known as the "theoretical depression" of a fan. Rule:—

$$H = \frac{U^2}{G}$$

H = Motive column in feet (theoretical depression).
U = Tangential velocity of fan in feet per second.
G = 32·2 (acceleration constant).

(To be continued.)

Flow Sheet—Transvaal Silver and Base Metals, Limited.



Diamonds and the South-West Protectorate.

The most interesting chapter, to us, in the report for 1920 of the Administration of the South-West Protectorate is that dealing with diamonds. The Administrator begins by stating that in view of the extreme importance of revenue from diamonds to the South West Administration, more than a passing reference to the present position is clearly called for. He goes on to say that, taken as a whole, the year 1919 was far and away the most successful year in the whole history of the diamond industry in South Africa. The sales from the Union alone reached the unprecedented figure of £13,379,662, whilst the diamonds produced in this Territory were valued at £2,081,863, and probably will have realised a good deal more. The Belgian Congo had also turned out 215,000 carats, to which must be attached a value of £1,000,000 or more. Altogether, the world had absorbed diamonds to an extent, as regards value, that had never been even dreamt of before. Sales continued good on the whole, and prices continued to soar for the best part of the following six months, that is to say, the first half of the year under review, and then followed a period of increasing stress which, but for the organisation and inherent strength of the forces supporting the industry, must have ended in a regular debacle. But even now, it is only a failure as regards sales, and prices still continue remarkably high in spite of the reduction recently intimated. Now, whilst all calculations are based on the world taking a certain average of diamonds from year to year, it has become equally recognised that the demand will be only intermittent, good one year and not so good the next, whilst the possibility of a serious slump, such as those of 1907 and 1914, is always to be kept in view. Looking, therefore, to the mere failure in sales for the time, there is no cause for taking a pessimistic, or even a depressed, view of the situation. Unfortunately, there are other elements which give greater cause for disquietude. These centre in the question of over-production, which appears to be the one and only great danger ever over-hanging the industry. It is doubtful, in the first place, whether the artificial and somewhat unnatural appreciation of prices by so wide a margin over the cost of production has proved a wise policy. One immediate result has been to give an enormous stimulant to the outside and uncontrolled production. Old mines that could never have kept in the field at former prices have again come on strongly, whilst the output from alluvial has increased by leaps and bounds. In the second place, there are the dangers from foreign competition and from new discoveries, whether in South Africa or elsewhere. The latter possibility is always to be apprehended, whilst, as regards foreign competition, we have already a producer in the Belgian Congo that threatens to become a very serious factor in the situation. When the foreign and uncontrolled local outputs together reach a stage that requires the present controlled producers to fight for a fair share in the profits of the industry, then the real crisis will have arrived, but in the meantime there is the possibility of an increasingly bad time for all. There is always a great probability, considering the forces at work, that foreign competition, in its early stages, may either come under the influence of the present powers behind the industry, or may agree to a reasonable restriction of output. As regards, however, what may be termed internal competition and over-production, nothing will meet the case short of the Government taking vigorous action by restricting the output of all mines individually and at the same time stopping the issue of all fresh prospecting and digging licences. The conclusion from what has been stated above is that, whilst the present severe depression in the diamond market may be regarded as more or less in the natural sequence of events, there are at the same time certain disquieting elements in the general situation that make it unwise, for the present, to regard our diamond taxes as a secure and reliable basis for estimating revenue.

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Messina.

The Messina Company, it may be recalled, guaranteed to the Union Government the interest on the cost of building the extension of the line from Pietersburg to the mine. We understand that an effort is being made to get the Government to forego its claims on the company, in view of the state of affairs in the copper market. A deputation of two leading residents of Pietersburg is now in Capetown supporting the Company in the matter, and we hope their visit will prove successful.

* * * *

New Heriot G.M. Co., Ltd.

The position of the New Heriot at December 31, 1920, was as follows: Cash at bank—Pietermaritzburg £3,089, Johannesburg £3,112, London £36; cash in hand, £12; fixed deposits—bank, £21,400; sundry debtors, £3,048; stores at mine, £4,288; investments, £3,788; insurance premiums, £251; gold in transit, £6,919—total, £45,945. Liabilities—Salaries and wages, £3,909; stores purchased, £1,066; sundry creditors, £2,757; accident insurance, £637; dividends unclaimed, £226; Miners' Phthisis Board—assessment, £10,002—total, £18,597. Notwithstanding efforts of management, results for first five months were so unsatisfactory that the Board decided to close down the mine as there was no prospect either of an improvement in the grade of ore or a reduction of working costs in the immediate future. The Board instructed the manager to stop operations on a normal scale on May 29, and thereafter to clean up with a view to the sale of the property and equipment. The recovery of gold remaining in plant and clean up of the battery and cyanide works will be pushed forward, and it is expected that the work will be completed in a few months. Net amount realised on sales of plant was £12,159.

Year with the "T.C.L."

MINERAL INTERESTS AND PROSPECTS—TIN AND COAL-BEARING FARMS—POINTS FROM THE ANNUAL REPORT.

The Directors of the "T.C.L.," in the course of their annual report, state:—Steps were taken during the year to realise the Company's holdings in Government loans. An amount of £72,250 (nominal) Union of S.A. 5 per cent. Local Registered Stock 1921/36 realised £68,436 2s. 5d., reducing the holding at 31st December, 1920, to £37,750 (nominal). This balance has since been realised, and provision has been made in the Appropriation Account for the loss on realisation. Union of S.A. 4½ per cent. Local Registered Stock 1929-39 of a nominal value of £4,285 was realised at par, and the balance of the Company's holding was written down to market valuation as at the close of the year. The holding of £25,000 (nominal) British 5 per cent. War Loan 1929-47 has been written down to the figure at which this investment was actually realised shortly after the close of the financial year.

The shareholdings in the Northern Lime Co., Ltd, Fairview (T.C.L.), Ltd., in liquidation, and the Co-operative Exchange Yard, Ltd., remain unchanged. The Fairview (T.C.L.), Ltd., has been placed in voluntary liquidation and, when its assets have been finally realised, a distribution is anticipated which should exceed the figure at which the shares stand in the Balance Sheet.

The holding in Swaziland Tin, Limited, was reduced by the sale of 150 shares. Dividends amounting to £1,244 5s. 0d. were received during the year and devoted to writing down the amount figuring against the shareholding.

Opportunity was taken to secure a holding of 10,000 shares in the Hume Pipe Company (S.A.), Limited, a local industrial concern of considerable promise, at 23s. per share. The holding has since the close of the year been increased by a further 2,500 shares, which your Company was entitled to take up at par out of a new issue of 50,000 shares. This Company is conducting a sound business, and its future outlook is promising.

A qualification share was secured in the Rand Mutual Assurance Co., Ltd., to enable your Company to place insurances with it.

The item "Tin Concentrate in Transit" stands at £37,666 18s. 4d., against £23,885 0s. 9d. at the 31st December, 1919. The increase is due to delays in realisation arising from restriction of opportunities for export to the Federated Malay States. The bulk of the concentrate had been sold prior to the close of the year, and the small tonnage unsold is included at a conservative figure.

The net profit for the year is shown in Profit and Loss Account as £90,951 3s. 10d. In this connection it must, however, be remembered that the policy continues to be followed, in respect of farm sales and certain township sales, of treating as profit only such amounts as have been actually received in cash. In view of the extended period of payment under the deferred instalment system, the book figure of profit is considerably larger, the difference, as explained to shareholders in previous reports, being held in suspense pending collection of the instalments. In previous Balance Sheets this difference has been included under the heading of "Sundry Creditors and Amounts in Suspense." In the appended Balance Sheet the figures are shown separately. At the 31st December, 1920, the amount in suspense in respect of farm sales was no less than £80,158 8s. 10d., and in respect of township sales £25,019 3s. 9d.

These two suspense items help to build up the total figure (£551,582 14s. 8d.) of the "Property Realisation and Building Loans Account," which, therefore, consists of:—

(a) Unrealised profit in suspense	£105,177	12	1
(b) Realised profit used temporarily as capital	446,405	2	1
	£551,582	14	8

The net revenue from Farm and other Rentals, viz., £7,393 11s. 8d., is practically the same as for the previous year.

Revenue from mineral royalties shows an increase of £4,484 10s. 2d., due chiefly to the increased returns from the asbestos tribute at Penge.

Farming operations show only a small return of £346 10s. 4d. for the year, against £4,279 17s. 0d. in 1919. These fluctuations, as shareholders are aware, are inevitable.

There is an increased revenue of £995 11s. 10d. under the head of Interest. The increased receipts from interest on mortgage bonds etc., were offset largely by the disappearance of interest on the large sums disbursed in connection with the Reduction of Capital.

Sundry Revenue increased from £235 13s. 9d. to £1,040 17s. 1d.

Administration expenses show an increase of £560 0s. 7d., which is but a modest figure considering the expansion of the Company's operations and the general rate of increase of all costs.

The increase of £556 14s. 2d. under farm taxes and assessment rates, an item of expenditure which should normally tend to decrease as our landed interests are disposed of, is accounted for almost entirely by the heavy increase in the Johannesburg Municipal rates.

Mineral Interests.

Groenfontein Tin Mine.—The profit for the year amounted to £13,208 14s. 11d. Owing to the serious drop in the price of tin which took place early in the present year, it has been necessary to close the mill and to curtail development. Provision has been made for carrying on additional exploratory work, so as to be able to take the fullest advantage of the situation when the price of tin recovers and milling operations can be resumed.

Mutue Fides Tin Mine.—Owing to lack of water and to poor values, it was only possible to mill for a portion of the year. Operations resulted in a loss of £1,263 2s. 3d. Prospecting and development have proved disappointing, and the mine has been closed down as at 28th February, 1921. It is of interest to note that this small mine, during its existence, has shown a net profit of £38,000, after paying all expenses and the cost of the plant, which remains as a realisable asset. While it is unlikely that economic conditions will ever be such as to justify the Company in resuming work on this property, it may be possible later on to arrange for the letting of the mine on tribute, and the Board are keeping this possibility in view.

Properties Let on Tribute.

Penge No. 780, Lydenburg.—The royalty received from this asbestos tribute for the year was £7,406, and the prospects are good of a continuance of steady revenue from this source.

Blane-Witkop Zinc Tribute.—Owing to the fall in the price of zinc, this mine has been closed down. Royalty received during the year amounted to £128 0s. 11d. The resumption of operations depends upon the recovery of the market price of zinc; at the present moment the prospects are not encouraging.

Weynek Tribute.—Notice has been received that this tribute also will in all probability be closed down owing to the low price of tin. The royalty received was £600.

Olifants Tin Mines, Limited.—Work has continued on a small scale, but no royalty has become due.

Montrose Gold Claims, Barberton.—The royalty received during the year was £949 5s. 1d.

Rietfontein No. 1228 Gold Tribute.—The revenue received from this proposition was £1,852 3s. 5d.

Mount Morgan Gold Mine.—This tribute has been given up, and since the close of the year the Company's plant has been sold, realising £750. Royalty received during the year amounted to £194 7s. 10d. Your Company retains the mining rights.

Corundum.—Royalties amounting to £251 14s. 3d. have been received from various small corundum tributes.

Mineral Prospects.

Witfontein No. 371, Waterberg.—The mine on this property was re-opened early in the year 1920 in view of the high price then prevailing for tin, at first promising indications were encountered, but the ore body subsequently petered out and operations were discontinued. A quantity of ore from the dumps was transported to Groenfontein and treated there, the proceeds of which practically met the expenses incurred.

Welgelegen No. 357, Waterberg.— A promising tin prospect was located on this farm; the values obtained are encouraging and the Board have accordingly arranged for a continuance of prospecting operations.

The T.M. & F. Group.

QUARTERLY RETURNS.

South African Coal Estates (Witbank), Limited.

The South African Coal Estates (Witbank), Ltd.—formerly Transvaal Navigation Coal Estates, Ltd., and Cassel Coal Company, Ltd.—report of operations for the quarter ended 31st March, 1921: Output, 108,876 tons. During the process of amalgamation no declaration of profit can be made. Cassel Section: Landau: Underground conditions continue good. Jacob's portion: Boring operations have been completed. Extensive area of excellent coal has been proved. Navigation Section: Bailey shaft: Hauling proceeding and development being energetically pushed ahead. Erection of plant for small coal almost completed. Navigation shaft: Sinking of air shaft completed. Seam is of good thickness and high calorific value. Boilers are in position and winder being erected.

Leeuwpoort.

Report of operations for quarter ended 31st March, 1921, as follows: Stamps, 17 (including 2 Nissen); time run, 40·12 days; tons crushed, 6,646 short tons; concentrates won, 99 long tons. Average assay value of concentrates is 60·19 per cent. metallic tin. Average price of metallic tin on which the revenue has been determined is £160 per ton. Estimated loss, £6,190 6s. 6d. Capital expenditure: The sum of £562 14s. 2d. has been expended for machinery, buildings, shaft sinking, etc. During the quarter a sum of £1,329 4s. for development redemption has been included in working costs. Since the mill was closed down in the middle of February the treatment of stacked Low Vanner tailings has been undertaken and the operations so far give every indication of the successful recovery of a goodly portion of the estimated tin contents. Development is being energetically pushed ahead.

McCreedy Tins (Swaziland), Limited.

Report of operations for the quarter ended 31st March, 1921: Output approximately 19·3 tons of 70 per cent. concentrates equal to 13·51 tons metallic tin, value at, say, £160 per ton, £2,161 12s.; working, realisation and general expenses (estimated), £1,800; estimated profit, £361 12s.

West End Diamonds, Limited.

Report of operations for the quarter ended 31st March, 1921: Test washings resulted in the recovery of 634¾ carats from 6,397 loads of mixed yellow ground, lime, and overburden from stripping operations, and yellow ground from development drives; diamonds of good quality and size are being recovered. Included in the above was a good shaped stone weighing 11¾ carats. Erection of the permanent plant referred to in the previous quarter's report, is making good progress.

Theron Diamonds, Limited.

Report of operations for the quarter ended 31st March, 1921: As already intimated in the press owing to the stagnation in the diamond market, washing operations have been temporarily suspended. Pending resumption of washing operations blue ground is being floored.

Rezende Mines, Limited.

Report of operations for the quarter ended 31st March, 1921: Total profit for quarter, £12,656 17s. 10d. General remarks: Native labour was again all voluntary, underground labour was somewhat scarce, surface labour being very plentiful. The reduced tonnage treated, and subsequent decreased output was due to the mine workers' dispute in March, the mill being hung up for a fortnight. Development continues quite satisfactory.

Cam and Motor Gold Mining Company (1919), Limited.

Report of operations for the quarter ended 31st March, 1921: Net loss for quarter, £17,177 2s. 4d.; development footage, 680 feet. During the period under review the milling and concentrating plant was started up. The usual troubles incidental to the starting of a new plant were met with, but the tonnage crushed was increased from 5,758 tons in January to 10,012 tons in March. Owing to the necessary conditioning and stocking of the plant, and the usual absorption of gold, as well as the long period of treatment, required by the concentrates, the revenue and the results for the quarter were quite abnormal. In addition to these difficulties, milling operations were seriously handicapped during February and March by the abnormal rainfall, which increased the water feeders in the mine to a quantity over the capacity of the mine pumps, and winding ore was interfered with as baling with the skips had to be resorted to.

Transvaal Silver and Base Metals.

In our last issue appeared the speech made by Sir George Albu at the extraordinary general meeting of shareholders in the Transvaal Silver and Base Metals, Ltd., which was held in Johannesburg on Thursday of last week. Sir George's review of the affairs of this company is admirably clear and lucid and shareholders after perusing the speech cannot but feel pleased at the excellent progress which has been attained in the development and equipment of the mines and at the attractive prospects possessed by the company. The proposition before the meeting was the creation of £160,080 new shares to provide sufficient funds to carry out the programme of shaft sinking, development and equipment necessary to bring the mine to the producing stage. The resolution was carried unanimously and the capital of this company accordingly now stands at £300,000. We hope to publish an account written by a representative of this journal, of the progress of work at the Transvaal Silver and Base Metals, in the near future.

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What the Mines Buy.

The following table shows stores consumed by the mines in the year 1920, and is taken from the Official Statement of the Mines Department:—

CLASSIFICATION.		TOTAL. Weight or Quantity.	Value. £
Bags	value	—	21,208
Belting (including laces and fasteners)	value	—	236,808
Boiler Fluid	value	—	2,566
Bricks	value	..	54,690
Brushware	value	—	19,655
Buckets	value	—	7,144
Candles	lb.	8,643,144	419,648
Carbide	lb.	5,165,408	134,889
Castings—			
(a) Brass	value	—	50,118
(b) Iron	value	—	174,303
Cement—			
(a) Bags	No.	191,008	92,905
(b) Casks	No.	143	346
Charcoal	value	—	5,518
Chemical and Assay and Smelting Requisites	value	—	155,033
Cloth, Canvas, Blanketing, Matting, etc.	value	—	46,125
Coal-cutting Machines	No.	142	17,375
Coal-cutting Machines Spares	value	—	20,467
Coal (a) Smithy	tons	21,238	31,895
(b) Steam	value	1,909,141	1,191,812
(c) Other	tons	101,050	55,811
(d) Duff and Dross	tons	307,420	89,897
Coke	tons	5,165	16,228
Compressed Air (purchased)	value	—	325,515
Concrete Pipes, Blocks, etc.	value	—	12,837
Cyanide	lb.	6,741,549	376,271
Disinfectants	value	—	25,023
Electrical Machinery (as detailed in Annexure D)	value	—	310,435
Electrical Machinery Spares and Fittings	value	—	134,104
Electric Power and Light (purchased)	value	—	1,359,622
Explosives—			
(a) Blasting Gelatine	cases	41,899	142,401
(b) Gelignite and Gelatine Dynamite	cases	534,900	1,243,740
(c) Dynamite and Ligdyn	cases	113,981	210,715
(d) Other Explosives	cases	6,886	18,106
(e) Detonators	value	—	91,067
(f) Electric Detonators (or Electric Fuses)	value	—	17,152
(g) Safety Fuse	value	—	325,008
(h) Lighting Torches (Tyisa Sticks)	value	—	16,438
Fencing and Wire Netting	value	—	7,973
Fodder for Stables—			
Bran, Chaff, Mealies, Forage, etc.	value	—	102,897
Foods, etc. (supplied free to Coloured Labourers)—			
(a) Beans	lb.	8,053,495	83,212
(b) Dholl	lb.	159,296	3,448
(c) Rice	lb.	1,884,777	44,186
(d) Meal (Mealie, Kafhr Corn, etc.)	bags	886,524	962,582
(e) Malt and Cereals for Beer	value	—	69,460
(f) Meat	lb.	37,209,591	709,124
(g) Fish	lb.	304,637	4,515
(h) Salt	bags	11,405	4,635
(i) Groceries, Coffee, Sugar, Oil, Ghee, Molasses, etc.	value	—	93,556
(j) Sundry Food, including Bread	value	—	301,563
(k) Vegetables	value	—	84,088
(l) Medicines, etc.	value	—	45,431
(m) Clothing, Boots and Leggings (excluding issues on repayment)	value	—	21,328
Foundry Requisites	value	—	5,216
Hand Tools (Picks, Shovels, Hammers, etc.)	value	—	193,035
Hose Fittings	value	—	34,381
Hosing (Steam, Suction, Rock-drill, etc.)	value	—	99,329
Hospital and Ambulance Requisites	value	—	33,332
Iron—(a) Bar and Angle	lb.	6,307,630	105,482
(b) Galvanized	value	—	37,588
(c) Sheet	lb.	159,759	3,815
(d) Pig	lb.	577,372	5,890
Ironmongery—			
(a) Bolts, Nuts, Washers and Rivets	lb.	3,848,313	120,459
(b) Screws and Nails	value	—	38,810
(c) Locks, Hinges, Staples, Chains, etc.	value	—	24,136
(d) Other	value	—	16,204
Lamps and Spares	value	—	24,646
Lead—(a) Pig	lb.	226,329	3,652
(b) Sheet	lb.	14,299	440
Lime—(a) White	bags	541,338	144,194
(b) Blue	bags	21,186	5,468
Lubricants—(a) Oils	gallons	826,013	218,045
(b) Grease and Tallows	value	—	157,212
Machinery and Machine Tools (as detailed in Annexure D)	value	—	535,579
Machinery Spares, other than Electrical)	value	—	341,469
Mercury	bottles	2,246	52,476
Metals (anti-friction)	value	—	34,728
Motor Cars and Accessories	value	—	38,702
Oils, other than lubricating—			
(a) Transformer	gallons	16,251	4,945
(b) Other	gallons	50,277	11,545
Oilskin Suits and Gumboots	value	—	43,190
Packing	value	—	64,567
Paint, Tar, Driers, etc.	value	—	38,595
Paraffin	cases	26,281	31,489
Petrol	cases	23,663	43,330
Pipes and Pipe Fittings	value	—	572,021
Rails, Crossings, Sleepers, etc.	value	—	396,412
Rock-drills	No.	1,195	55,440
Rock-drill Spares	value	—	359,516
Ropes—(a) Wire	value	—	392,529
(b) Vegetable Fibre	value	—	16,444
Sand and Stone	value	—	17,246
Screening	value	—	33,982
Shoes and Dies	lb.	11,874,758	200,635
Skips, Cages, Kibbles and Spares	value	—	27,180
Soap	lb.	654,344	19,569
Soda	lb.	516,415	4,463
Stable Requisites	value	—	11,748
Stationery and Printing	value	—	111,995
Steel—(a) Bar, Tool, Cast, etc.	lb.	2,563,778	60,553
(b) Sheet	lb.	9,831,396	195,255
(c) Hand-drill	lb.	2,127,387	56,792
(d) Rock-drill	lb.	8,670,121	317,494
(e) Other	lb.	1,743,362	34,168
Tamping (Plugs, Paper, etc.)	value	—	8,387
Timber—			
(a) Building Material (Ceilings, Floorings, Doors, etc.)	value	—	56,833
(b) Oregon, Pitch Pine, etc.	value	—	441,730
(c) Mining Poles and Lagging	value	—	584,864
(d) Deals	value	—	126,966
(e) Other	value	—	90,097
Transport, Railage, etc.	value	—	82,558
Tube Mill Requisites—			
(a) Pebbles and Flints	value	—	247
(b) Liners	value	—	72,970
(c) Other Requisites	value	—	11,826
Trucks and Spares	value	—	179,182
Waste	value	—	18,157
Water (purchased)	value	—	207,076
Wood Fuel	value	—	24,085
Zinc and Zinc Discs	lb.	5,429,293	220,153
Sundry Articles not specified above	value	—	255,858
TOTAL VALUE		—	17,764,253

Year.	Gold Mining Industry.	Diamond Mines.	Coal Mines.	Base Mineral Mines.	Works (Lime, Flint and Gypsum).	Total.
1919	13,208,449	1,058,050	1,301,570	333,207	—	15,901,276
1918	12,983,470	747,142	1,083,905	362,385	90,968	15,267,870
1917	12,704,839	688,801	996,242	453,398	79,985	14,923,265
1916	12,320,502	360,485	798,611	448,037	67,623	13,995,258
1915	10,935,383	139,521	617,819	343,150	46,498	12,082,371
1914	10,277,087	969,325	643,158	291,879	43,086	12,224,535
1913	10,633,152	1,645,219	643,256	395,504	45,774	13,362,905
1912	10,311,940	1,466,151	523,025	307,135	51,796	12,660,047
1911	11,714,755	1,450,127	544,782	305,830	55,614	14,071,108

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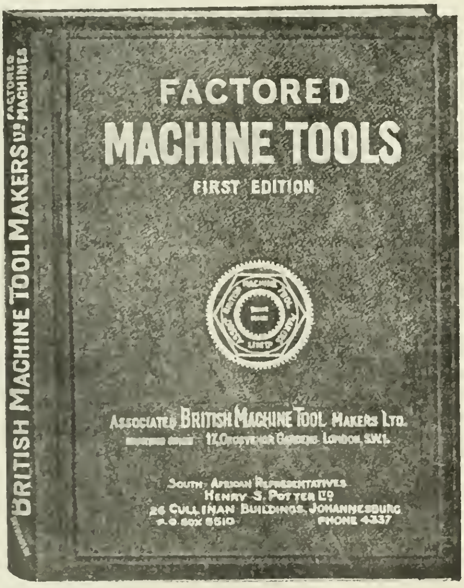
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ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

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EDITORIAL.

SOME STATISTICS AND A MORAL.

We are indebted to the Mines Department this week for a batch of statistics reflecting the outlay by the mining industry on wages and stores. In another part of this issue we print under the heading, " What the Mines Buy," a detailed list of the stores consumed by the industry in 1920. For the Transvaal gold mines the figure was £14,363,000, compared with ten and a half millions in pre-war days. The total for the Union, including diamond and coal mines, was £17,761,253, which is nearly two millions higher than for 1919 Turning to the figures of the industry's expenditure on wages and salaries, we find that for the whole Union the total was £14,641,400 from just over twelve millions in 1919. For the gold mines the total is £11,108,600, as against £9,514,300 for 1919. In pre-war days the total was about seven and a half millions. Native wages in the mines of the Union amounted to £8,293,000, an increase of over three quarters of a million on the average for the six preceding years. The gold mines paid out under this heading £6,053,000, which showed an increase of about half a million on the year. In round figures the mining industry of the Union paid out nearly thirty-two and a half millions in stores and wages; and the moral, of course, is the magnitude of the part played by the industry in the economic life of the Union.

OUR SECOND SPECIAL COAL NUMBER.

We wish to take the opportunity of reminding our readers of the forthcoming issue of our Second Special Coal Number. The work is now in active preparation, and it is hoped to have it out by the end of June. Owing to the large amount of work entailed, it is not yet possible to fix the exact date of publication, but readers will be notified thereof in our columns. As on the last occasion, the volume will be entirely separate from the usual weekly issue of this journal. The price has been fixed at 2s., and orders may now be booked in advance at this office, or at our London office. The importance of the publication, which will cover every phase of the coal industry in the country, is best reflected in the following striking passages from the speech made eighteen months ago by the Prime Minister at Victoria West. We make no apology for here repeating that passage:—

" South Africa is undoubtedly the greatest mining country in the world. You have more minerals here, you have a greater wealth of mines here than you will find anywhere else. Our coal is one of our greatest assets. But whoever thinks of that? The other day I had a conversation with a gentleman who came here in connection with a scheme for the electrification of our railways. Our railways can be run much cheaper by electricity than by steam, and the gentleman who has come out in connection with the matter is an expert with a world-wide fame I discussed matters with him and we talked about our South African coal, which made him remark that there was nothing in the world like our country. ' South Africa's potentialities as regards coal,' he said, ' are immense. You have one continuous coalfield here and in Rhodesia which will not be exhausted for a thousand years.' In view of the fact that coal is one of the articles of which the human race has the greatest need, you can appreciate the possibilities and potentialities of a country like ours. We have enormous quantities here of the cheapest coal in the world. In olden days people only thought of the diamonds and gold which South Africa produces, but our diamonds and our gold must go as time passes, yet there are other resources which are far more valuable in the long run."

SIR DAVID HARRIS AND THE BUDGET.

A week ago in the House of Assembly Sir David Harris delivered an important speech on the Budget, the mining industry and the state of the country's credit. Sir David is, of course, the principal representative of the diamond industry in the Union Parliament, and he is often called upon to defend it.

Replying to some of the Labour effusions which have been forthcoming during the long-drawn-out debate, the hon. member for Beaconsfield had no difficulty in disposing of the familiar Socialistic fallacy, as applied to the diamond industry, that the white workers are the sole producers of wealth, and are entitled to the proceeds accordingly. What, for example, about the natives? In February last, as Sir David Harris showed from the mining returns, eight natives were employed in mining to every white worker. It is obvious that in any labour claim to a monopolisation of profits the natives, who are assuredly the main asset so far as brawn and muscle are concerned, cannot be left out of the account. Yet the Labour Party habitually leave the natives, in this respect the country's basic asset, out of their calculations.

Another point ignored by those who have talked about De Beers making 1¾ millions last year is that during the same year no less than £1,200,000, in round figures, was paid in taxation. As, however, Sir David Harris insists, it is necessary to take the good and bad years together. The Labour critics pick out a good year for their special purposes, and give the directors and shareholders no consideration whatever for the exceptional risks, and the inevitable adverse periods, which such an undertaking as the diamond industry necessarily involves. When those who, for political or other reasons, are prejudiced against the diamond industry, display their inveterate hostility to capital in this direction, they may well be reminded, as in the speech [illegible], to take into account all the facts of the case.

In conclusion, Sir David Harris deprecated pessimism, of which there has been a good deal during this year's Budget debate. During his fifty years' residence in this country, he has seen much worse crises, but the country has always weathered the storm. He agrees that if ever there was a time for economy, that time is now. But, given the strictest economy, there is no need for despair.

Notes & News.

Another World's Record Broken by No. 18 Ingersoll Leyners.

* * * *

Some time ago we announced a remarkable record made by a miner by the name of Ellitson, at the Geduld mine, with No. 18 Ingersoll Leyner drills. We have just been advised by the Union Corporation that this same miner broke his previous world's record with the same three machines in the same grade of rock and the same stoping width. The record which he has just made during the month of April is as follows:—Type of drill, No. 18 Ingersoll Leyner drills; number of drills, 3; total machine shifts, 78; total fathoms broken, 221; fathoms per machine shift, 2·83, tons broken per machine shift, 45; stoping width, 63 inches. As Mr. Ellitson has used these same drills for a considerable length of time and made remarkable fathomage in four consecutive months last year, that is, August, September, October and November, he deserves a great deal of credit for making special efforts to break his own record with these same machines. Ordinarily, a man asks for new machines whenever he wishes to make a special record. This figure of 2·83 fathoms per machine shift is a remarkable performance, and we believe stands unequalled in the world to-day under the same conditions, and not using more than three drills.

* * * *

Flow Sheet of Transvaal Silvers.

We are indebted to Mr. Errol Hay, Consulting Engineer to the Transvaal Silvers, for the flow sheet of that property reproduced on another page of this issue. The flow sheet will amply repay study by mining men and metallurgists, and even shareholders will find it of interest. In the design and general lay-out of the smelting and concentration plant, it will be remembered the company had the benefit of the advice of Dr. Hiberlein, who came to the country for the purpose. It is hoped that the plant may be in operation about October.

* * * *

National Bank Maintains 8% Dividend!

The National Bank has delivered a telling rejoinder to the critics of the banking system of this country. It's annual report, issued last week, shows its net profits for the year end 31st March, 1921—including the balance of £13,000 brought forward, and after providing fully for all bad and doubtful debts, and placing £50,000 to bank premises—amount to £382,000. The bank investments stand at or under the present market prices. At the forthcoming annual general meeting of shareholders, to be held in Pretoria on Wednesday, 29th June, the directors will recommend a dividend of 8 per cent. per annum, absorbing £237,000, and the following allocations, namely, £50,000 to reserve fund (making the same £1,300,000), and £60,000 to pensions fund, leaving a balance of approximately £35,000 to be carried forward.

* * * *

Coal Owners' Losses.

A statement by the South Wales Coalowners' Association before the coal strike, based on the returns of the Mines Department, shows a loss in South Wales of 14s. 5·77d. per ton in January and 17s. 1·80d. in February, although in the latter month the output bonus wage was reduced from 3s. 6d. to 1s. 6d. per shift. The total pithead loss, exclusive of capital charges, was £1,969,668 in January and £2,082,580 in February. Compared with January, there was a fall of 4s. 1¾d. on inland coal, 9s. 6d. on export coal, and 11s. 4d. on bunkers. The chief cause of the loss was the high cost of labour, wages accounting for 38s. 7¼d. per ton, and other costs 11s. 4·5d. The amount expended on wages alone was £1,688,000, the total proceeds of the industry being £1,351,000, representing an excess wages cost of 2s. 9d. per ton. Only fourteen out of 170 companies showed a credit balance. The results are without precedent in their financial gravity, and the general state of the trade in March was worse than in February.

* * * *

Anglo-French Exploration.

By way of preparing the shareholders for the absence of any dividend in respect of 1920, the Directors of the Anglo-French Exploration Company commence their report with a reference to the unfavourableness of last year's conditions for business connected with mining—conditions which seriously affected the Company in the matter of both earnings and depreciation on holdings. Hence it is not altogether surprising to find that the net realised profit came out at only £15,600, as against £64,500 for 1919. Depreciation on certain holdings calling for £31,100 no distribution can be made. Then in place of the surplus of nearly £117,000 shown at the end of 1919, the valuation of the assets indicates a deficiency of about £6,000 as compared with the paid-up capital and outstanding debentures. This, however, is obviously not a serious matter, while the fact that the Company's liquid resources total £136,000 leaves considerable scope for enterprise on the part of the Board and its advisers.

* * * *

Consolidated Diamonds and the Slump.

At the annual meeting of the Consolidated Diamond Mines of South-West Africa, held last week at Capetown, Mr. H. C. Hull said that to a profit of £219,973 remaining unappropriated must be added £128,365 profit made between October 1, 1919, and the date of signing the adoption agreement, and £270,563, the amount paid out of the profit for debenture interest and debenture redemption. The falling off in sales resulted in the company having a stock of 346,675 carats on hand. At December 31, 1920, the directors reduced the company's production to approximately 15,000 carats per month, there being no immediate recovery in the diamond market indicated, and in the light of the discontinuance of advances against working costs it was necessary for the board to consider the position and decide whether under all circumstances it would not be advisable to discontinue production from the fields altogether for the time being. The quota delivered to the London Syndicate for the quarter ended March 31, 1921, amounted to £219,552, and the chairman regretted that the quota for the current quarter would only amount to approximately £15,000. He added that a more hopeful tendency in the diamond market was reported by those who were best able to judge its future and it was hoped there would be a partial recovery at any rate before the end of the current year.

* * * *

The Late Mr. Henderson.

We learn with regret that Mr. J. C. A. Henderson died suddenly in mail week, while on his way to the City. Mr. Henderson was one of the pioneers of the Witwatersrand goldfields in the early 'eighties, and, like some of those who were "in at the commencement," amassed considerable wealth. His good fortune, however, deserted him later, and for a number of years past he had taken no active part in City life. The "Henderson group," as it used to be called, comprised the Henderson's Transvaal Estate, the Daggafontein Prospecting Syndicate, the Daggafontein Gold Mining Co., the Consolidated South Rand Mines Deep, Henderson's Nigel, Ltd., the Delagoa Bay Development Corporation, the Tyne Valley Colliery, and the Swazie Borders, Ltd. Some of these concerns have long since disappeared, but others are still being carried on, under different control.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twelfth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

S.A. Land and Exploration Co., Ltd.—Eighteenth ordinary general; 38 Meischke's Buildings; May 18, 12 noon.

Knight Central.—Corner House; May 20.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general, May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting; May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting; May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Union Corporation, Ltd.—Ordinary general meeting; 91 Main Street; June 3, 11 a.m.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rand Mines.—Corner House; June 2

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Coal.

Coal, Wages and Profits.—The Statist, April 9, p. 591.

Electric Haulage vs. Pit Ponies.—Colliery Guardian, April 8, p. 1032.

Engineering.

Economics of Hydro-Electric Development.—The Engineer, April 8, p. 367.

The Powers of the Electricity Commissioners.—The Engineer, April 8, p. 370.

Recent Development in Large Turbine Practice.—Iron and Coal Trades Review, April 8, p. 500.

Iron and Steel.

Stresses in Steelwork.—Iron and Coal Trades Review, April 8, p. 497.

The Failure of Metals.—Iron and Coal Trades Review, April 8, p. 502.

Conditions in the Iron and Steel Trade.—Iron and Coal Trades Review, April 8, p. 506.

Mining.

The Future of Mining.—Mining and Scientific Press, April 2, p. 441.

Steam Shovel Operations.—Mining and Scientific Press, April 2, p. 453.

Lead Poisoning.—Mining and Scientific Press, March 26, p. 427.

Miscellaneous.

Industrial Relations.—Mining and Metallurgy (New York), April, p. 11.

The latest advices (dated last Saturday) from London, regarding the metal market, are to the effect that during the week the metal market has been remarkably steady, despite the developments in the coal situation. A broadening of the demand is anticipated when unrest subsides.

Copper has been steady and a small trade has been carried on. It is estimated that the present production of copper in the United States will be about one-third of the normal capacity.

In tin the bull movement received strong support, based on a further strengthening of the statistical position here, and the reluctant attitude of Eastern smelters.

Lead was firm, consumers continue to buy for early delivery The arrivals during the week were small.

In spelter there was a steady demand, but the market was quiet. The offerings were small.

Silver to-day sold at 34¾d., and was steady. Buyers and sellers appear to be holding back. No permanent improvement is expected while China keeps out of the market.

There was a large arrival of gold during the week, which went to America.—Reuter.

Latest Metal Market Prices.

On the London Metal Exchange on Monday standard copper closed at £70 12s. 6d. cash, £70 forward; electrolytic copper, £71 cash, £73 forward; Straits tin, £169 15s cash, £171 15s. forward; English lead, £21 10s. cash, £21 12s. 6d. forward. Bar silver, 34½d. per ounce; fine gold, 103s 8d. per ounce. Quicksilver, per bottle, £11 7s. 6d

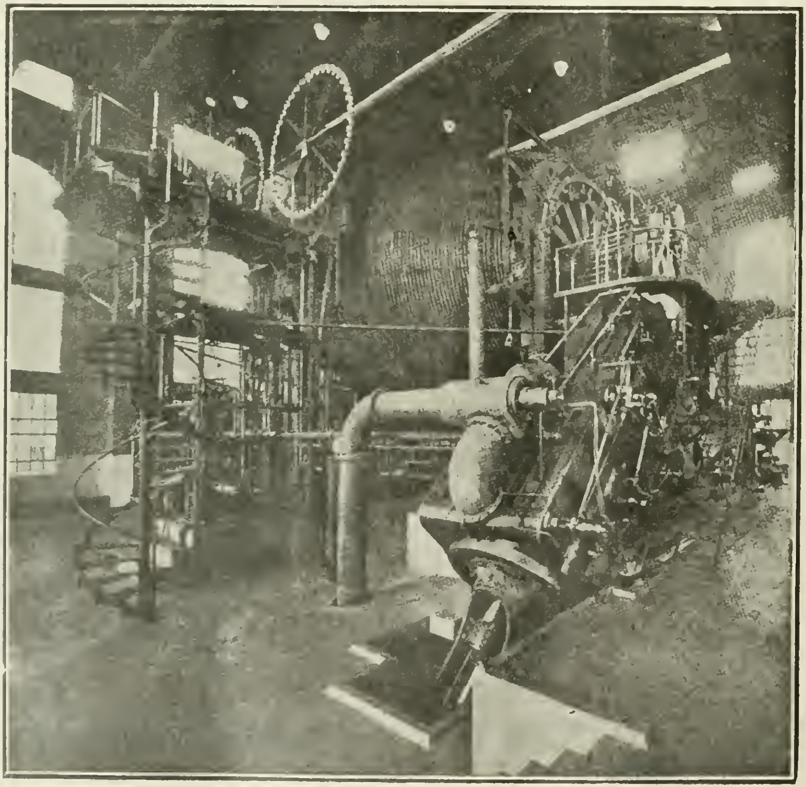
ENGINEERING SECTION.

The Largest Mine Hoist in the World.

WONDERFUL MACHINERY, DESIGNED ESPECIALLY FOR VERY DEEP MINING OPERATIONS, HAS GONE INTO SUCCESSFUL OPERATION—HOIST LIFTS 10 TONS OF ORE FROM DEPTH OF 10,000 FEET AND WILL HANDLE REDUCED LOADS FROM 13,300 FEET—EACH SKIP WEIGHS 5 TONS, AND WEIGHT OF ENGINE AND CONDENSING APPARATUS IS 1,765,000 POUNDS.

The tremendous depths to which the mining of copper rock is being conducted at some of the mines in the Upper Peninsula of Michigan has called for the installation of machinery of extraordinary qualifications, for efficient and economical operations under the extraordinary circumstances. This article is a concise description of the largest mine hoist in the world, built and installed by the Nordberg Manufacturing Co., of Milwaukee, at Quincy No. 2 Shaft, at Hancock, Mich.

Operations at the Quincy No. 2 shaft now have reached a depth of 7,000 ft. The installation of the new Nordberg double compound condensing hoist represents the application of the most modern practice in steam engineering to mine hoisting. This hoist is designed to take care of its maximum load to a depth of 10,000 feet down the incline shaft, and will handle reduced loads from a future depth of 13,300 feet.



View of New Quincy Hoist

The load of copper ore raised each trip is 10 tons. Each skip weighs five tons. The hoist is designed for a rope speed of 3,200 feet per minute. The hoist operates with two skips in balance. The ropes are 1⅜ in. diameter, the weight of one rope 10,000 feet long being 16,250 pounds.

The hoist is of the double compound type. Each cylinder is arranged in an individual frame, and is mounted on a massive triangular base with the drum shaft above at the apex. Each engine is set at an angle of 45°, the arrangement being such that the two high pressure cylinders drive one end of the drum shaft and the two low pressure the other end, with the drum between. This is an arrangement of the two four-cylinder Nordberg hoists in service for many years at the Tamarack mines, at Calumet, Mich. It will be noted that this gives eight impulses per revolution, equally timed.

In very deep mines the weight of the rope becomes an important factor, the effect on plain cylindrical drums being to impose an excessively high torque at the start (with a correspondingly large engine), and a very low or even negative torque at the end of the trip. This, of course, means very uneconomical operation in addition to troubles in braking and other difficulties. It is evident that at the start, with the loaded skip and its rope working on a short radius, and counterbalanced by the empty skip on a large radius, an easier starting condition is secured. Likewise at the end of the trip, the empty skip and its long rope work on the short radius, and the loaded skip on the long radius of the drum, so that negative moments are avoided. It is for this reason that the cylindro-conical drum has been adopted for practically all of the deep mines in the Lake Superior Copper district. For the new Quincy hoist the drum was especially designed to handle the maximum amount of rope as well as to secure a uniform torque.

Heaviest Rotating Machinery.

The drum is the largest ever built and is furthermore the heaviest piece of rotating machinery in the world. The drum is 30 feet in diameter and about 30 feet long. It is of the steel trussed type, mounted on two massive supporting spiders of box pattern. By this arrangement the shaft is relieved of load, the drum itself forming the element of strength. The shell is of cast iron made in 48 sections, which are held in position by radial rods and trusses so that the whole becomes a compact unit. All joints are planed.

There are two take-up drums mounted within the main drum, one at each end. These drums are for the purpose of attaching the ropes which are wound over them, and passing through the small diameter of the large drum at each end. These drums can be operated independently of the large drum for adjusting the rope for the proper length. They are operated by 10 h.p. Dake engines through suitable spur gearing.

As indicated above, the engine is of the double compound type, there being two high pressure and two low pressure cylinders, and two large re-heating receivers. Valve gears of the Nordberg Corlis type operated from drum shaft. The reversing gear is the well known four-gear mechanism so that equal steam distribution is secured for either direction of operation. The low pressure pistons are supported by the crosshead and tail guides. Low pressure cylinders and high pressure cylinders are all provided with separate throttle valves, those for the high pressure being of the balanced Poppert type, while those for the low pressure are of the rocking valve type. The frames are of the heavy duty type. The two at each end of the drum shaft are built as a unit with the main bearing above. These bearings are provided with top and bottom shells.

P.O. Box 3807.
ROCKWOOD PRESSED STEEL UNIONS
H. ALERS HANKEY - - - Sole Agent.

Improved Safety Stop.

The hoist is fully protected by improved safety stop, whereby the throttle valve is automatically closed as the skip approaches the landing. In case of attempt to overwind, the brakes are applied automatically, and the control so arranged that the hoist cannot be started in the wrong direction by the operator. This safety stop also provides against overspeed The drum is provided with two pairs of Nordberg parallel motion post brakes. The brake posts are cast iron lined with basswood and are reinforced by a system of truss rods so as to relieve the brake posts of all strains. The brakes are applied by weights and relieved by an hydraulic thrust engine, the control being such that the brake post follows the motion of the operator's hand lever, the action being similar to what it would be if directly hand operated.

The brakes, reversing gear and throttles are all actuated by hydraulic thrust engines, using oil under pressure, and are served by an accumulator of the loaded plunger type. Oil to the accumulator is supplied by a triplex plunger pump, which draws from a sump into which the thrust cylinders discharge. These thrust cylinders are especially designed for hydraulic service, being provided with Poppet valves, so arranged that when the valves are closed the piston is locked in position.

Indicators are provided of very large diameter showing the position of the skips in the shaft. The main bearings are provided with flood lubrication, oil being supplied by mechanically operated pumps. Crank pins and cross-head pins are oiled by an ingenious device mounted on the connecting rod end. This consists of a multiple feed plunger pump which receives its motion from the relative motion between the ends of the two opposing connecting rods. Cylinders are lubricated by mechanically operated oil pump.

Huge Condensing Apparatus.

The condensing apparatus is of the counter-current jet type. The condensing drum is of very large proportions, especially suited to the conditions at this mine. Owing to the fact that a relatively large amount of steam is used at the start in accelerating, it is necessary to provide a large weight of water at this time in order to maintain the vacuum. This condensing drum is provided with a series of trays over which the injection flows in a series of curtains, meeting the incoming steam from the cylinder. There is provided a pair of vertical circulating pumps and a horizontal dry air pump, both operated from a horizontal Nordberg Corliss engine. The condenser is provided with a vacuum breaker preventing the accidental flooding of the low pressure cylinders.

Engine and Condenser Weigh 1,765,000 lb.

The total weight of the engine with the condensing equipment is 1,765,000 lb. The engine covers a space of 60ft. x 54ft., and stands 60ft. high from the bottom of the foundation to the top drum. The total amount of foundation required 3,000 cubic yards of concrete.

Below are some of the leading dimensions: Drum diameter, 30ft.; steam cylinders, 32in. and 60in. x 66in.; main bearings, 28in. x 54in.; crank pin, 15in. x 15½in. dia.; crosshead pins, 8in x 12in.; piston rod—high pressure, 6in.; piston rod—low pressure, 10in.; condensing drum, 8ft. dia. 17ft. long; air pump steam cylinder, 14in. x 36in.; dry air pump cylinder, 22in. x 36in.; circulating pumps, 24in. x 12in.

Largest Mine Engine-House.

The Quincy No. 2 engine house is the largest mine hoist building ever built. It is 73 by 76 feet, and 90 feet from the basement floor to the roof. The entire building is of steel and reinforced concrete, with red faced brick in the outside walls, and a green glazed tile roof. The main building has a 23ft. lean-to. All doors and sashes are of steel with glazed wire glass in windows. In the main building there are no columns or other supports to obstruct. There are 75 tons of structural steel in the building, aside from reinforcing bars.

—From *Skilling's Mining Review*.

The Steel Industry: India's Example to Africa.

SKETCH OF THE RISE OF THE GREAT INDIAN STEEL INDUSTRY IN THE PAST TWELVE YEARS.

In the following article an interesting account is given of the rise of the steel industry in India. It contains an obvious lesson for South Africa.

Sir Valentine Chirol tells a remarkable story of the rapid development of a great steel industry in India—one of the romances of modern industry—which is of remarkable interest to us in South Africa to-day in view of our own infant iron and steel industry.

India's Steel Capital.

"It is a somewhat chastening reflection that the creation of the one great metallurgical industry in India has been due not to British but to Indian capital and enterprise, assisted in the earliest and most critical stages not by British but by American technical skill," writes Sir Valentine in the *Times*. "Had it not been created when it was, our Syrian and Mesopotamian campaign could never have been fought to their victorious issue, as at that juncture Jamsheedpur could alone supply the rails for the construction of the railways essential to the rapid success of those great military operations.

"Equally chastening is the reflection that from its very inception, less than 20 years ago, its pioneers had constantly to reckon with the indifference and inertia of Anglo-Indian officialdom. With the almost solitary exceptions of Sir Thomas Holland, then at the head of the Geological Survey, and Sir Benjamin Robertson, afterwards Chief Commissioner of the Central Provinces, where the first but unavailing explorations were made, they seldom received more than a minimum of official countenance and assistance.

The Tata Company.

'Not till Messrs. Tata's American prospectors had explored this region did the Government of India realise that untold mineral wealth lay here, within 150 miles of Calcutta, almost on the surface of the soil; and not until the pressure of the Great War and the inability of India to draw any longer upon British industry for the most vital supplies compelled them to turn to Jamsheedpur do they seem to have at all appreciated what the enterprise meant for the Empire.

"When the War was over Lord Chelmsford visited Jamsheedpur and generously acknowledged that debt: 'I can hardly imagine (said the Viceroy) what we should have done if the Tata Company had not been able to give us steel rails, which have provided not only for Mesopotamia, but for Egypt, Palestine, and East Africa.'

Converting the Jungle.

"In the short history of modern industrial enterprise in India nothing can compare in point of romance with the story of the iron and steel industry of Jamsheedpur. It may be very briefly recalled. In 1902 Mr. Jamsheedji Tata, a veteran of the great Parsee community of Bombay and one of the founders of the Bombay cotton industry, visited the United States. In New York he called, with a letter of introduction from Lord Avebury, on Mr. C. Page Perin, an eminent mining engineer, who was at once impressed with the schemes his visitor unfolded, though they were still quite visionary. Mr. Perin, who is still the consulting engineer of the Tata Company, agreed to send a party of American prospectors, and followed them in 1904 to India.

"Long was the search and many the hardships undergone, and Mr. Jamsheedji Tata himself passed away before he could see the fulfilment of his dream. But Sir Dorab Tata proved himself not unworthy to follow in his footsteps.

Finding the Money.

"When an area hitherto almost unknown and unexplored had been definitely located, combining in an extraordinary degree the primary requisites of adequate coalfields, vast ore deposits of great wealth, a sufficient water supply, a suitable site for a large industrial town with good railway communication, and all within 150 miles of Calcutta, he and a small group of his Bombay friends tried to find in London the financial support which they imagined would hardly be denied to an enterprise of such immense importance for our Indian Empire. But they failed.

"It was then that they appealed to their own fellow-countrymen for the capital needed. Never had such an appeal been made, but the response was immediate and ample. The 'Tata Iron and Steel Works Company' was launched as an Indian company, and to the present day all the hard cash required has come out of Indian pockets.

Clearing the Scrub for a City.

"In 1908 the first clearance was effected in what had hitherto been a barren stretch of scrub jungle sparsely inhabited by aboriginal Southals, one of the most primitive of Indian races, and in 1910 the first works, erected by an American firm, were completed and started. As far as the production of pig-iron was concerned success was immediate, but many difficulties had to be overcome in the manufacture of steel, which had never before been attempted in a tropical climate. These, too, had been surmounted by the end of 1913, in the nick of time to meet the heavy demands and immense strain of the Great War, towards the end of which Government took as much as 97 per cent. of the steel output, and obtained it from the company at less than a quarter of the price that it would have commanded in the Indian open market.

A Promising Future.

"The War stimulated the rapid expansion of the works on a far larger scale than had ever been anticipated. Instead of the one blast furnace originally contemplated, five are already in operation, to be shortly increased to ten. The old mills were steam driven; the new ones are electrically driven, and electricity is generated by the waste gases of the blast furnaces yielding about 20,000 h.p. No doubt is entertained as to the demand for the enormous output from such a plant. Nor is it contemplated that it will meet anything like the full needs of India, which are growing apace. Before the War India imported annually about 1,000,000 tons of steel products.

"Equally little room is there to question the continued supply of either coal or ore. The life of the coal mines which the Tata Company possess within about 100 miles of their works is estimated at 200 years, and they form only a very small portion of the great carboniferous area known as the Gondwana measures.

"The Tatas aim at making Jamsheedpur a model industrial town worthy of the high standard which they have reached in their works."

ASBESTOS IN MOZAMBIQUE.

The *Beira News* understands from a reliable source that Capt. Male and Mr. Botha, of Vanduzi, have discovered asbestos deposits about 35 miles from Vila Pery. Samples sent to the National Bank assayer at Bulawayo were well reported upon. The discovery comprises five reefs of a total length of approximately 10 miles, covering about 2,500 hectares, but a reliable estimate and report on the proposition cannot be forthcoming until the long grass is burnt off. A river running past the deposit is expected to give sufficient power to run the necessary machinery.

Cab-Tyre Sheathed Cables and Flexibles.

We have received from Siemens Brothers & Co., Ltd., Caxton House, Westminster, London, S.W. 1, a catalogue of their cab-tyre sheathed cables and flexibles. These cab-tyre sheathed cables (600 megohm association grade, patent No. 3996/11) are made in accordance with the standards of the Cable Makers' Association, of which they are members.

Specification: Conductors of high conductivity, tinned copper wires, insulated with pure and vulcanised india-rubber, the whole vulcanised together and sheathed with a layer of patent cab-tyre compound.

Testing: These cables are tested after at least 24 hours' immersion in water at 60 deg. F., and a label certifying the minimum insulation resistance per mile after one minute's electrification is attached to every coil (of not less than 100 yards) despatched from their works.

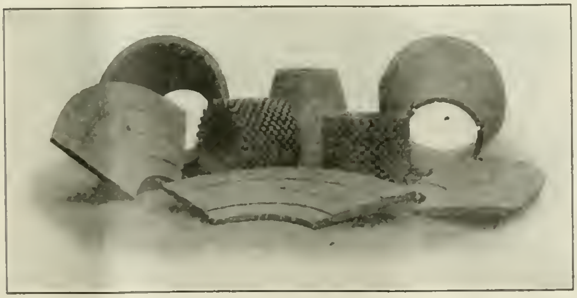
				Single Core Cable.				Twin Core (Circular) Cable.			
Number and diameter of Wires.	Nominal Area.	Di-electric Thickness.	Megohms, per mile.	Overall Diameter.	Price per 1,000 yds.			Overall Diameter.	Price per 1,000 yds.		
Inch.	Sq. Inch.	Inch.		Inch.	£	s.	d.	Inch.	£	s.	d.
1 ·036	·0010	·034	2000	·204	31	0	0	·308	63	10	0
1 ·044	·0015	·034	2000	·212	33	10	0	·324	71	10	0
1 ·064	·0030	·036	2000	·236	40	10	0	·392	96	0	0
3 ·029	·0020	·036	1250	·234	39	0	0	·388	92	10	0
3 ·036	·0030	·038	1250	·254	45	0	0	·428	111	10	0
7 ·029	·0045	·039	1250	·265	52	0	0	·450	132	10	0
7 ·036	·0070	·041	900	·290	62	0	0	·500	161	0	0
7 ·044	·0100	·043	900	·318	77	0	0	·556	205	0	0
7 ·052	·0145	·046	900	·348	94	0	0	·616	261	0	0
7 ·064	·0225	·049	900	·410	128	0	0	·740	364	0	0
19 ·052	·0400	·056	750	·492	208	0	0	·944	586	0	0
19 ·064	·0600	·062	750	·564	273	0	0	1·088	772	0	0
19 ·072	·0750	·066	600	·612	324	0	0	1·184	921	0	0
19 ·083	·1000	·072	600	·719	423	0	0	1·358	1181	0	0
37 ·064	·120	·075	600	·758	483	0	0	1·436	1351	0	0
37 ·072	·150	·080	600	·824	573	0	0	1·588	1643	0	0
37 ·083	·200	·088	600	·957	735	0	0	1·814	2095	0	0
37 ·093	·270	·095	600	1·041	885	0	0	1·982	2510	0	0
37 ·103	·300	·102	600	1·125	1040	0	0	2·200	3050	0	0
61 ·093	·400	·114	600	1·305	1390	0	0	2·530	4075	0	0
61 ·103	·500	·121	600	1·409	1640	0	0	2·788	8950	0	0
91 ·093	·600	·125	600	1·533	1960	0	0	3·046	5955	0	0
91 ·103	·750	·131	600	1·655	2345	0	0	3·290	7065	0	0
127 ·103	1·000	·141	600	1·921	3175	0	0	3·742	89375	0	0

An extra charge will be made on all lengths of less than 50 yards for sizes up to and including ·1 square inch sectional area.

The cab-tyre sheathed flexibles (C.M.A. grade, patent No. 3996/11) are made in accordance with the standards of the Cable Makers' Association, of which they are members.

Specification: Conductors consisting of H.C. tinned copper wire ·0076 inch diameter, insulated with one layer of pure and two layers of vulcanised india-rubber, the whole vulcanised together and sheathed with patent cab-tyre compound.

Testing: The guaranteed insulation resistance is 1,250 megohms per mile after 24 hours' immersion in water and one minute's electrification. The test voltage is 1,000 volts alternating current for 15 minutes.



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THE POSITION IN THE BRITISH MACHINERY AND ENGINEERING TRADES.

We are indebted to H.M. Senior Trade Commissioner for the following authoritative and first-hand information which is culled from the monthly Bulletin of the Department of Overseas Trade.

Considerable variation exists with regard to the state of the general engineering trades. While some trades are still over-booked with orders, which have sometimes to be executed at a loss owing to the rise in prices, others have received a severe set-back owing to dearth of orders, buyers having been holding off for various reasons. Generally speaking, the market is now favourable to the buyer. Long delivery is a thing of the past except in isolated cases, and guaranteed delivery is the order of the day. This has also led to a readiness to quote firm prices, a further feeling of confidence being engendered by the fact that, for the first time since the outbreak of the War, the cost of living has shown a slight setback and, consequently, no further demands are expected from labour for increased rates of pay.

The Question of Finance.

A difficulty affecting the heavier grades of engineering is finance The general shortness of financial accommodation is leading to the execution of such orders as promise the quickest form of remuneration, while firms whose credit has all along been of the highest find it necessary to stand off their men rather than make up large quantities of stock. It is necessary for buyers to realise this, for, unless they do, they may find that, in spite of the depression which has existed, when they are at last willing to order their supplies, the makers will be unable to satisfy their needs. This refers more especially to seasonal trades such as agricultural and plantation machinery. In other directions, where the Export Credits scheme operates, there is a general tendency to take advantage of it for the restoration of the countries by the supply of industrial plant, rolling stock and transport supplies. The fruits of this will be eventually gathered when the restored industries commence to pay back in kind for present goods.

Cancellation of Orders.

The cancellation of orders has greatly affected some sections of industry and led to severe measures being taken against buyers who have repudiated their contracts. The general effect of panic trading must eventually be bad for all concerned and too optimistic reports from certain overseas agents have had as much to do with the collapse in buying as the flooding of export markets with goods from other sources. The more conservative and steady policy of British interests has proved the sound one, and that the financial strain due to unsound business in certain quarters will be weathered is the considered opinion of prominent British economists.

Machine Tools.

At the annual meeting of the Machine Tool Trades Association, held recently in London, it was stated that the period of depression showed signs of relaxing somewhat, and high hopes were entertained for increased business in the future The machine tool trade is regarded as a "barometric" trade with regard to other branches of engineering, and the fact that the position in this trade shows signs of improvement is taken as indicating a probable revival in the general engineering trade in the not far distant future.

The increase in tonnage exported in 1920 over 1919 is approximately 50 per cent., the figures being as follows:—

	Tons.
1919	16,146
1920	24,212

At the same time further orders could be dealt with and would be welcomed. Standard lines can usually be delivered from stock, while reasonably quick delivery can be given for more special types. Owing to the shorter deliveries it has been found possible to remove the "variation" clause from contracts, and fixed prices will be quoted.

American and German Competition.

The chief competing countries are America and Germany. The exchange operates in favour of the United Kingdom as against United States of America, and in favour of Germany as against the rest of the world. It is, however, anticipated that United States of America makers will cut prices down to cost in order to get rid of surplus production. Germany is only just coming into the market and her position has yet to be defined. British exporting houses are, however, accustomed to supply a range of mixed products, and it is recommended that overseas houses should place their business, whether for British or foreign machinery, through London, so as to take the utmost advantage of the market

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The "Mining Journal's" Essay Competition.

The enduring improvement which our mines require can only be obtained through the media of better efficiency and lower working costs and with a view to eliciting constructive views on these supremely vital subjects the *South African Mining and Engineering Journal* offers a prize of £25 for the best essay on the subject of "How to Improve Efficiency and Lower Working Costs in and on the Mines of the Witwatersrand."

Criticism should be constructive rather than destructive, but the assurance is given that no competitor will in any way be prejudiced in his employment by the submission of criticism of existing means or methods.

Essays containing libellous or malicious statements against any particular individual or individuals will not be considered.

TERMS OF THE COMPETITION.

The conditions of this competition are as under:

1. Essays must not exceed 2,500 words in length, and where new or suggested devices form an essential portion of the Essay, the contribution should be accompanied by diagrams clearly exhibiting the nature and functions of such device or devices.
2. Essays should be typewritten or written in easily legible handwriting on one side of the paper (preferably of foolscap size) only.
3. Each essay must state the full name and address of the author and if the author is an employee of a Mining Company operating in South Africa or has been an employee of such a company, his occupation and position should be stated.
4. Essays and diagrams (if any) must be addressed to the Editor, the S.A. *Mining and Engineering Journal*, Box 963, Johannesburg, and be marked "Competition" in the top left-hand corner of the containing envelope.
5. The competition closes on July 1st, 1921.
6. In the event of the Committee of Adjudication deciding that no essay submitted merits the award of £25, the Committee will have power to withhold the award of such a prize and to give in lieu thereof an amount which they consider proportionate to the value of the best article or articles submitted.
7. It shall be at the option of the Editor of the S.A. *Mining and Engineering Journal* to publish any essay or any portion of any essay submitted and to pay for such essay or portion thereof at the rate of £2 2s. per page according to the measure of pages in the S.A. *Mining and Engineering Journal*.
8. No correspondence can be entered into regarding this competition, and the Editor of the S.A. *Mining and Engineering Journal* will not hold himself responsible for the safe return of any manuscript submitted, but where a stamped and addressed envelope is forwarded with each contribution the Editor will, after adjudication, endeavour to return unsuccessful contributions.
9. A competitor may submit more than one contribution.
10. It is an express condition accepted by and binding upon all competitors that the decision of the Committee of Adjudication as constituted above or of any alternative adjudicators is final and absolute. Submission of manuscript will infer a full understanding of the acquiescence of the competitor in this and other conditions of the competition.
11. Essays may be written in either of the official languages.

Points for Competitors.

There are one or two matters in connection with this essay competition which we would like to bring to the notice of competitors.

In the first place it should be made clear that a good idea will not be debarred from winning the prize offered because the contribution fails from a literary point of view. Neither will brevity be a handicap. On the contrary we shall welcome briefly expressed ideas and suggestions provided that they contain some useful and new idea or some better application of an idea or device which is not new or novel

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The Week in the Sharemarket.

ONLY FOUR DAYS' BUSINESS—GOLD 103s. 8d.—UNCERTAIN OUTLOOK.

The factors affecting the share market have not materially altered since last week. If anything, prices are easier, due to the lower gold premium, the continued crisis in the British coal industry, and the absence of finality in the Allied negotiations with Germany. Against all this, a point is being made of the fact that the gold mines have now four months profits in hand. The market, possibly in view of this, closed fairly steady on Wednesday afternoon, though it had opened easier. We ought soon to have some more reassuring news from the other side, and no doubt the prices here would quickly respond. Quotations for the short week are as follows:—

	Fri. 29th.	Sat. 30th.	Tues. 3rd.	Wed. 4th.
Anglo American Corporations	20 9	20 0*	20 6	20 0*
Apex Mines ..	6 9*	6 9*	6 9*	6 9*
Bantjes Consolidated	5 0*	5 0*	5 3*	5 3*
Brakpan Mines	54 0*	54 0*	53 6½	53 6
Breyten Collieries	5 0*	5 0*	5 0*	5 0*
Brick and Potteries	-	—	4 0*	4 0*
Bushveld Tins	0 6*	0 6*	0 6*	0 6*
Cassel Coals	30 0*			-
Cinderella Consolidateds	2 0*	2 6†	2 0*	—
City and Suburbans	3 0†	2 6*	2 0*	2 0*
City Deeps	43 0*	44 0	44 6a	42 6*
Clydesdale Collieries	25 6*	25 6*	26 0*	26 0*
Consolidated Diamonds	13 6	13 0*	13 0	13 0
Consolidated Investments	23 0*	—	23 0*	23 0*
Consolidated Main Reefs	10 9*	10 9*	11 0	10 9*
Consolidated Mines Selection ...		—	15 0†	15 0†
Coronation Freeholds	1 0*	1 0*	1 0	1 0
Coronation Syndicates	- -	3 9*	4 0*	4 0*
Crown Diamonds	2 9*	2 10	2 11	2 10½
Crown Mines ..	39 0*	39 6*	41 0†	41 0†
Daggafontein Mines	3 3*	3 3*	3 6	3 9
East Rand Coals	2 0*	2 0*	2 1*	2 1*
East Rand Deeps	0 6*	—	0 6*	0 6*
East Rand Proprietary	5 0*	5 0*	4 9*	4 10*
Eastern Golds	0 7*	0 7*	0 6*	0 6*
Frank Smith Diamonds	3 2	3 1	3 1	3 2
Geduld Proprietary	17 0	47 3*	47 3*	47 3*
Glencoe Collieries	11 9	11 6*	11 6*	11 9*
Glynn's Lydenburgs	10 0†	—	8 6*	8 6*
Government Areas	79 0	80 0a	80 0	80 0
Jupiters	3 6*	3 6*	3 7	3 8*
Knight Centrals	4 1*	4 1*	4 0*	4 0*
Lace Proprietary	7 6*	—	—	
Leeuwpoort Tins	9 6	9 6	9 6	9 3
Lydenburg Farms	4 9*		4 9*	4 9*
Meyer and Charltons	82 6†	82 6†	80 6*	80 6*
Middelvlei Estates	1 3†	—		
Modder B.'s ...	25 6*	25 7*	25 9	25 3
Modder Deeps	44 3*	44 6	45 0	45 0*
Modder Easts	11 1½	11 1½	11 3	11 1*
Do. Options (4 years)	0 3†		0 2*	0 2†
Natal Navigation Collieries	31 6*	31 6*	31 6*	32 0*
National Banks ...	220 0†	220 0†	220 0†	220 0†
New Eland Diamonds	24 0	23 0*	—	—
New Era Consolidateds		6 6*	6 6*	6 6*
New Geduld Deeps	1 3*	1 3	1 3*	1 3*

	Fri 29th.	Sat. 30th.	Tues. 3rd.	Wed 4th.
New Kleinfonteins	5 10	6 0	6 0	5 9*
New Modderfonteins	64 0	65 0*	66 0	66 6
Nourse Mines	6 9*	6 11*	7 6	7 6
Premier Cements ..	30 0*	30 0*	30 0*	30 0
Pretoria Cements	51 6	51 6	—	
Princess Estates		1 0*	1 0	—
Rand Collieries	1 0*		1 0*	
Rand Nucleus ...	1 3†		1 0*	1 2†
Randfontein Centrals	9 6	9 3*	10 0†	9 0*
Randfontein Estates	11 6	14 6	14 6*	11 6
Roberts Victors	10 0†	—		—
Rooibergs ..	1 0	4 6*	4 9*	4 9
Ryan Nigels	3 8*		3 6*	3 6*
South African Lands	4 2*	4 2*	4 1*	4 1*
Springs Mines	34 9	34 6*	35 6	36 [illegible]
Sub Nigels	11 6	12 0	13 0	13 0
Swaziland Tins	5 6†	5 6*	6 0*	5 6*
Transvaal Consolidated Lands	17 9*		17 9*	18 0b
Transvaal G.M. Estates	7 9	7 9*	7 6*	
Van Ryn Deeps	71 3*	71 9*	72 0*	73 0
Van Dyks	1 3*	—	—	
Village Deeps ..	7 3*	7 6†		—
Western Rand Estates	3 6*	—		
Witbank Collieries	42 6*	43 0*	43 0*	44 0
Witwatersrands			15 0†	15 0†
Witwatersrand Deeps ...	7 0*	6 9*	7 0*	—
South African Townships	9 3*	9 3*	9 3*	9 3*
Wolhuters ...	4 3	4 2	3 6*	3 1*
Zaaiplaats Tins	3 7*	3 9	3 9	3 9*
Union 5 per cent.	£97¾*	£98½*	£96*	£96½
Hume Pipes	20 6†		19 6†	19 6†
New State Areas	23 9*	23 0*	23 6*	23 0
Rouxvilles	2 0*	2 0*	2 3*	2 3
South African Akali	13 6	15 6	17 0	15 0
Do. Options	0 6†	—	1 0†	1 [illegible]
Transvaal Silvers ..	22 6*	21 6*	21 6*	21 0
West Springs	12 0	12 3	13 1½	13 1½
De Beers Deferreds	—	—	230 0*	230 0*
De Deers Preferreds	200 0*	-	202 6*	205 0*
South Van Ryns	4 6†	4 0*	4 6†	—
Theron Diamonds ...	8 6*	8 6*	—	—
Tweefontein Collieries	20 0	—	—	—

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.

SURVEYOR'S CERTIFICATES—March, July and October (Extra) Exams. 100 %, 50 % and 60 % respectively of S.A. total.

MANAGER'S CERTIFICATES.—Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A.

OVERSEER'S CERTIFICATES.—Two thirds of the S.A. total for year 1920 75 % for January, February, March, 1921.

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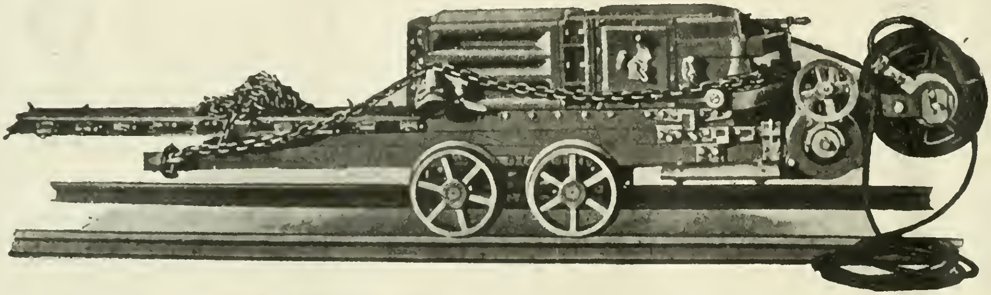

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Oogies.
Middelburg Coal Co.
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Elandslaagte.

Newcastle Colliery.
Natal Steam.
Durban Navigation Coy.
Tendega Colliery.
Buffalo Collieries.
Natal Navigation Collieries.

ETC., ETC., ETC.

Future Tin Values.

U.S. AND EASTERN VIEWS.

In the course of their review of the Metal markets in mail week, Messrs. Rudolf Wolff and Company, the well-known firm of metal merchants, embody the following instructive reports from their correspondents in Malaya, America and China, and conclude with an opinion, which, coming from such a conservative source, must be deemed significant, that the "call option" on tin is at present an attractive operation. The views given are of particular value as coming from the chief centres of production and consumption.

F.M.S. Output Falling.

Messrs Rudolf Wolff & Co write..:—From our correspondents in Ipoh, Malaya, we have the following information:—"The approximate amount of tin which the Federated Malay States Government has in stock is 10,000 tons, and it will be sold at a loss. The effect of the present very low price will be the closing down of all Chinese mines, which cannot produce at the present market price. This will undoubtedly have a tendency to reduce stocks. Prices are now so low that some of the best-equipped mines are making very small profits on sales, and we estimate that production will drop by as much as 50 per cent. unless there is a recovery in the near future. At the present time most of the dredging companies are carrying out much-needed repairs, although even these are curtailed as much as possible owing to the reluctance to spend money."

China Not a Seller.

Our Hong Kong house reports that there has been of late a good deal of difficulty in dealing with Yunnan rough tin, from which the so-called Nos. 1, 2 and 3 Chinese tin are produced. Apparently the Governor-General of the Province, Tong Kai Y, has been driven from the power which he has exercised for some years past, and Chinese and European merchants generally refuse to remit funds to Yunnan, owing to the operation being too risky. Consequently, it is anticipated that the arrivals of tin thence will be meagre, if not stopped entirely, for the time being. Holders in Hong Kong are therefore very reluctant to sell in any quantity. Our latest advice gives the price of No. 1 Chinese as £163.

America Heavily Stocked.

Our American correspondents, whom we consider reliable, write us this (Friday) morning that: "Every consumer of tin in this country is heavily stocked and has practically no orders on his books." We can quite understand that the makers of containers are short of orders, but are surprised at the remark regarding the stocks of tin held. It is, however, an undoubted fact that during the last six months the U.S.A., which are far and away the largest consumers of tin, have managed to get along without purchasing tin of any kind in this country, and have even gone so far as to ship tin produced in the U.S.A. We have been informed, and we believe the information to be correct, that Bolivia has become almost a negligible quantity in the supply of tin, and as it is from these ores that the tin is produced in the U.S.A., we anticipate seeing a considerable falling-off in this direction.

Chance for a "Corner."

"However, the whole situation resolves itself into one of money. If there were any person, syndicate or corporation who could, at the present time, put up the necessary funds to acquire the world's control of tin, we feel sure (says Messrs. Rudolf Wolff) that they would have a very remunerative operation. In the meantime, there are undoubtedly stocks sufficient for us to trade upon, and prices may even now (although below the cost of production) sag several pounds. The 'call' option may be obtained for £11 per ton at the present moment, and we should strongly recommend our friends to watch this owing to the great possibilities of the market. The carry of tin for three months costs £3 15s. to £4. The premium on Straits tin is £8 per ton, on Banca tin £15 per ton, and Billiton £8 per ton. The 'double' option could be purchased at £22 per ton. While we are not in the habit of giving tips in our reviews, we do honestly think the investment of £11 per ton in the 'call' of tin at round about £165 per ton offers very great chances of profit with very little possibility of loss."

Sir Evelyn Wallers is leaving on a short business visit to England.

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MODDER EAST DEVELOPMENT.

The report of the Directors of the Modder East for the quarter ended 31st March, 1921, states, inter alia:

The development footage accomplished during the quarter shows an increase of 585 feet, and as the labour position is satisfactory a further increase is expected in the current quarter. The reef exposures at No. 2 and No. 3 shafts show improvement, with a satisfactory percentage of payability; very little work was done in the immediate neighbourhood of No. 1 incline shaft, and as no new payable areas were discovered, the percentage of payability and values for the quarter were lower than hitherto. The average disclosures to date are very little altered by the results obtained during the quarter.

Mining, etc.—The quantities dealt with were as follows: From stopes, 48,958 tons; from development faces, 28,500 tons; from surface dumps, 22,768 tons. The percentage of sorting was 23 per cent., and the tonnage milled 76,700 tons, the Apex plant having been run at its capacity throughout the quarter. The percentage of ore from stopes and development faces has increased and from surface dumps has decreased. The values obtained from stoping have continued as a rule to exceed the valuation of the blocks on which stoping has taken place.

The following are the estimated prices used in calculating the working revenue, after deducting realisation charges: January, £5 5s. per fine oz.; February, £5 3s. 6d. per fine oz.; March, £5 3s. 3d. per fine oz. The average yield for the quarter was 8·053 dwts. per ton milled. Compared with the preceding quarter, the decrease in profits was due partly to a reduction in yield of ·361 dwt. per ton and to an increase of 3s. 6·5d. in the working costs resulting from the larger proportion of ore milled from stoping, but mainly to the heavy fall in the price of gold.

During the quarter £85 Debentures have been converted into shares, leaving a balance of £410,760 Debentures outstanding as at 31st March, 1921. A total of 364 shares had at that date been taken up under the four year options expiring on the 1st July, 1921. The registered capital of the company as at 31st March, 1921, amounted to £1.215.62 in £1 shares, all issued, fully paid.

MARCH COMPANY REGISTRATIONS.

Thames Trading Co., Ltd.: capital, £500.
The Bethanie Co-operative Stores, Limited: capital, £1.000.
Eff Dee Products, Limited: capital £2.000.
McCombs, Ltd.; capital £3.000.
Durban Roodepoort Mining Syndicate, Ltd.; capital £3.750.
Vollmer, Ltd.; capital, £2.000.
Boekenhout, Ltd.: capital £2.500.
Premier Oil (Shale) Syndicate, Ltd.: capital, £15.000.
Mirrilees, De Beer & Glen, Ltd.: capital, £6.000.
Partridge, Chilton, Turpie & Co., Ltd.: capital £10.000.
Hughes Ltd.: capital, £6.000.
Motorites, Ltd.: capital £1.000.
Rand Soap & Chemical Products, Ltd.: capital, £500.
Central Hat and Cap Factory, Ltd.; capital, £5.000.
Barratt & Pillans Forge and Foundry, Ltd.; capital £30.000.
The Wattle and Produce Company of South Africa, Ltd.: capital, £5.000.
Venetian Beads and Modes Ltd.: capital, £500.
Hector Lezard and Ben Hart, Ltd.: capital, £2.000.
Consolidated Estates and Trusts, Ltd.: capital £10.000.
Koster Land and Investment Co., Ltd.: capital, £10.000.

FOREIGN COMPANIES.

Consolidated Silver and Lead Mines, Ltd.: capital, £100.000.
Kodak (South Africa), Ltd.; capital, £10.000.
S. Smith & Sons (South Africa), Ltd.; capital, £50.000
The Smithfield Cold Storage and Export Company of South Africa, Ltd.; capital, £381,909.

Diamonds.

During last year the value of cut diamonds imported into the Union was £22,471, and the exports of diamonds in the rough amounted to 2,039,551 carats, valued at £11,597,457

Wireless.

A new wireless station has been formally opened for traffic at Port Elizabeth. A range of four hundred miles has been obtained during the day time, which, it is anticipated, will be increased at night up to a radius of one thousand miles.

CRAVEN & SPEEDING
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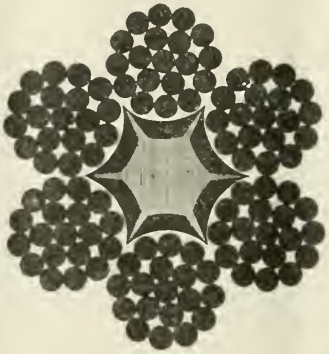
WIRE ROPE.

It provides greater safety than can be secured by the regulations attached to the New Mines Act, because it is impossible for any acid in the hemp core to corrode the wires in the strands. A rope with an ordinary core frequently appears to be in good condition on the exterior, whilst its interior is in a dangerous condition.

As the strands cannot crush each other there is no internal friction, and in consequence, broken wires are reduced to the minimum.

SAFEST ROPE FOR WINDING AND HAULAGE.



At a normal load there is less elongation and consequently less twist in the shaft than is usual with ropes constructed with ordinary cores.

Prevents disintegration of Hemp Core.

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WIRE ROPE

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—TRADING ON THE MINES: TEST CASE—COAL TRUCK-TIPPING INVENTION—BRITISH BUDGET: HUGE DEBT REDUCTION DURING 1920—TRANSVAAL PROVINCIAL FINANCES—NATIONALISING THE MINES—BLOEMFONTEIN WOOL FACTORY—EFFECTS OF COAL STRIKE—ELECTRICITY BILL.

This has been a holiday week and little falls to be recorded in regard to business generally. As is usually the case, the month has started well, with more inquiry, but transactions on the Commercial Exchange have been few and of an unimportant character. The mines are still buying only what is absolutely necessary for immediate requirements. The trend of prices, both of iron and timber, is still inclined to go easier. The reduction of the Bank of England rate of discount by ½ per cent., though smaller than was generally expected on either side of the water, is, of course, all to the good, and is bound, together with the splendid Budget presented by Mr Chamberlain (so different, alas! from our own) to have a favourable effect on financial conditions generally. But, taking a broad survey of the general position—the protracted coal strike in Britain, with its paralysing effects on the industrial life of the United Kingdom, and the present contretemps with Germany—it is difficult to see how any radical improvement in trade conditions can take place until those vital matters have been satisfactorily settled. In the event of the coal dispute lasting much longer—and appearances at the moment unfortunately do not preclude that possibility—our market is certain to improve, as local stocks are gradually being reduced and, without hope of much replenishment for some considerable time, prices are bound to harden. Latest advices are to the effect that prices for iron and steel are already stiffening at Home.

Iron and Steel.

Business this week, although interrupted by two holidays, has been somewhat better, the period under review comprising the end and beginning of a month, when things are invariably livelier. There is no great change to report in prices, but the tendency is at the moment of a downward character. Latest quotations:—Dunswart, 29s.; Union Steel Corporation have reduced their quotations as follows: Angles and ordinary sized rounds and flats, 36s.; small angles, 38s. 6d.; small flats and rounds, 37s. 6d.; imported iron and steel flats, smalls, 40s. to 50s.; larger sizes, 38s. 6d to 55s.; ¼in. rounds, iron and steel, 55s.; 5-16in., 55s.; ⅜in. iron, 40s.; steel, 7-16in., 44s.; mild steel, 43s.; ¾in. iron and steel, 42s. 6d.; ⅞in. to 2in., rounds, 39s. 6d.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅝in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d., imported angles, 42s. 6d. to 47s. 6d.; ⅝in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d. to 8¾d.; larger sizes, 7½d. to 8d.; spring steel flats, 8½d. to 9d per lb.; mild steel plates, 1-16in., 40s. to 41s.; 3-16in., 39s. to 40s.; 5-16in., 35s. to 36s.; ½in., ⅜in., ⅝in., ⅞in. and 1in., 35s to 42s. 6d; bolts and nuts, ⅜in., 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d per 100 lb.; ⅝in., 66s.; ¾in., 64s.; nuts, ⅜in. and ¾in., 87s. 6d.; fish plates, bolts and nuts, ⅜in., ¼in., ½in., 9½d. per lb.; ⅝in., 72s. 6d.; ¾in., 68s. 6d. per 100 lb.; dog spikes, 35s. per 100 lb.; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d; ½in., 64s.; ⅝in., 60s. 6d. per 100 lb.; tool steel, 3s. 6d to 3s 11d per lb.; brass rods, ⅜in. round, 1s. 10d.; ½in., 1s. 8d; ¾in. and upwards, 1s. 6d. to 1s. 9d. per lb.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 6d. per lb.; drill steel, 7½d, hollow, 1s 0½d.; wire nails, 42s. 6d. to 57s. 6d.; shovels, 65s. to 70s.; wheelbarrows, 70s.; bricks, 45s. to 75s.; pick handles, 35s.; fencing wire, 30s. to 50s.; barbed wire, 33s. to 34s. 6d. per 98lb. coils, 24s. to 25s. per 68 lb. coils; screening, 3s. to 10s. per square yard; cyanide for outlying mines, 1s. 6d. per lb.; zinc shavings, about 1s. per lb.; galvanised iron piping, ½in., 6d. per foot. Prices at Home for steel are hardening and are ranging from £58 to £60 a ton; under the circumstances, nobody is importing. The cut in freights recently made by the Conference Lines affects iron and steel goods to the extent of 20s., drilling and tool steel and pig iron 30s., agricultural implements and machinery 10s., and other machinery 20s.; rails, 35s

Engineering Shops.

Business generally appears to be mending. The holidays this month (two more are coming towards the close) are looked upon with great disfavour as disorganising business very considerably. General expenses run on and the income is greatly curtailed by these breaks, which are considered as of no benefit even to the employee; the workers have their 14 days' holiday, which is allowed for, and does not dislocate business. In the opinion of most business men, when increased production is the cry, these holidays, it is thought, should be reduced. In a conversation with the head of a leading engineering shop, he said that South Africa should avoid the groove where railways, municipalities, tram systems, etc., manufacture their own requirements. It was well known that under such systems mistakes in the foundry, fitting or moulding shops, which would at once be rejected by independent parties, were often condoned, as "Tom did not want to go back on Jack," etc. These mistakes are, therefore, "blinded" and put in in such a way as to escape general notice. He thought it was not improbable that many of the accidents which occur to our trains, trams, etc., might, if thoroughly investigated, be attributed to the fact that a municipality, a railway, or a tram department will accept workmanship of machine parts which would be immediately condemned if a private firm were supplying them.

GOVERNMENT EXAMINATIONS
Up-to-date Tuition.

MANAGER'S CERTIFICATE (METALLIFEROUS). We secured 15 Passes from 19 Entries in two recent examinations, and in the last (Jan. 1921) examination secured 7 passes from 8 entries. **Another percentage record!**

MANAGER'S CERTIFICATE (COAL).—New Class recently started. Candidates being enrolled.

MINE SURVEYORS' CERTIFICATES.—We have secured 55 Certificates to date, and lead with passes by more than 10 to 1.

OVERSEER'S CERTIFICATE.—We lead with passes, 1918 and 1919. 21 Certificates secured during 1920. Overseers' Class (Coal) recently started.

PRELIMINARY SURVEY.—We have trained the majority of the Assistant Surveyors working in the Mines.

WRITE FOR PARTICULARS AND CLASS TIME TABLE.
CORRESPONDENCE TUITION WHERE PERSONAL TUITION IS IMPOSSIBLE.

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Postal Address: Box 6301. LECTURE ROOMS: PERMANENT BUILDINGS

We understand that the Leeuwpoort Tins are about to drop 5 stamps. It is stated on good authority that the mine has a life of 25 years ahead of it on 3 per cent ore. Of course it is a known fact that in tin mining rich zones are encountered in all mines, so that this property on the face of it, notwithstanding that the price of tin is down at present, has a promising future. We hear that on the adjoining farms, which are well held, a strike of great importance has been made, which will be made public as soon as the money market improves. There seems to be a great future for this locality, as there are rumours of the railway being extended to this district, which would undoubtedly spell prosperity both as to mining and agricultural activities in this region. The Transvaal is undoubtedly a land which in respect of its mineral resources will hold its own with any other in the world.

Timber and Building Materials.

Business has been fairly good this week; stocks on hand are satisfactory and consignments are arriving freely. The Baltic market is easier and labour troubles are likely to curtail production considerably. Nothing much is occurring in the building trade at present. Three by nine deals are 1s. 5d.; scantlings, 1s. 4½d.; floorings, 8¾d. to 9d.; ceilings, 6d.; beaver boards, 5d.; oregon, 9d. to 9s. 6d.; pitch pine, 10s. 6d. a cube; corrugated iron, 24 feet gauge, 10½d. to 1s.; furniture timber, Japanese oak, 1in. to 2in., 1s. 9d. to 1s. 10d. per square foot; Burmah teak, 21s. 6d. for the best; seconds, 20s. free on rail; American oak, 1in. to 3in., 1s. 6d. to 1s. 8d. per square foot; American black walnut, 1in. to 4in., 1s. 8d. per superficial foot, free on rail Cape Town; West African mahogany, 1in. upwards, 2s. 3d. per square foot, free on rail Durban; 3-ply ash, 5 m.m., 10d. per square foot. Stock bricks are about 70s.; mixed bricks, 60s.; wire cuts, £4 10s. to £5; pressed bricks, £5 per 1,000 at yard; white lime, 7s.; unslaked, 10s. 6d.; cement, 11s. 6d. per bag; damp-course and roofing, 1-ply, 37s. 6d.; 2-ply, 47s. 6d.; 3-ply, 60s.

Blue Hydraulic Building and Plastering Lime.

Trade in this section has improved slightly during the past month, and prices have dropped somewhat. It is now possible to obtain blue building lime at 4s. 6d., and blue plaster at 5s. 6d. per bag, and some merchants are quoting as low as 4s. 3d. and 5s. 3d. respectively.

Inferior lime is still being sold as reputable brands by some merchants, but the masons soon realise the difference as soon as their trowel is in the mortar.

With a more or less plentiful supply of cement, blue lime has had a set back during the past few months, specially at the coast, where it had been introduced rather well. Contractors have, however, gone back to using cement for mortar or plaster purposes, with a mixture, perhaps, of a white lime obtained nearby.

Building operations otherwise have been very quiet, but with the advent of the housing schemes and a greater stability in financial circles, a revival is bound to take effect, as long as the shortage of houses continues to remain acute.

The second-hand iron and timber yards are not very busy at the moment; stocks are coming in fairly freely; timber is selling at 1s. 2d. and iron at 6d. to 8d.; casements from 9s. to 25s; doors, new, 35s. and upwards; mouldings from 2½d.

Cement.

During 1920 50,455,012 lb. of cement was imported into the Union, of which 1,300,000 lb. came from Germany, and 35,000,000 lb. from the United Kingdom.

Electrical Goods.

Business in town still remains slack, being confined principally to repairs, etc., but along the reef things seem to be a shade better, and orders are now coming in from the country more freely than of late. A further consignment of half-watt lamps, American, has arrived and been disposed of, leaving the shortage nearly as acute as before. Materials are arriving freely and stocks in nearly all lines are satisfactory. Continental goods are coming in at somewhat reduced prices. Local quotations remain much about the same as before, with, however, a downward tendency. With a view to meeting the severe Continental competition, the Conference Lines have reduced freight on electric goods and lampware by 10s.

Trading on the Mines.

An important test case was decided at Boksburg last week before the additional magistrate, Mr. Malcolm C. Hill, when Mr. Joseph Wm. Smith, manager of the E.R.P.M. Buying and Distributing Society Store, was charged with contravening the Shop Hours Act by trading on a Wednesday after 1 p.m. The defence set up was that they were not a shop and were not trading. The magistrate, in the event, said he could not accept the plea of the defence, as the whole thing bore the stamp and was characteristic of a real, genuine mercantile business except in name. Under the circumstances, he was forced to the conclusion that accused was conducting a business in a shop and was therefore guilty. As this was a test case, a sentence of £1, or four days' imprisonment, would be passed, to be suspended for 14 days in case an appeal should be lodged.

Coal Truck-Tipping.

Messrs Wright, Boag and Co. have constructed a very clever contrivance for the transference of coal from trucks to ships's hold. The invention consists of a structure of four large iron rims, standing parallel, of 25 to 30 feet high, inside which lies a railway truck of a capacity of 40 tons of coal, which can easily be turned upside down, allowing its contents to be shot out in the needed direction. It is calculated that the laden trucks can be run into the skeleton tunnel, capsized, emptied and run out in the space of three minutes, giving an unloading capacity of 800 tons per hour. The scheme is so adaptable that every size of truck can be accommodated. It is further calculated that the use of the

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device will enable the setting free of 160 trucks in an eight-hour working day, or the unloading of some 6,400 tons of coal from the colliery trucks. The invention, which goes by the name of car-dumper, is due to Mr. G. Provay. It is to be erected at Lourenco Marques by the Portuguese Government and should prove of the greatest importance in the development of the Transvaal coal trade. A demonstration of the new invention was given during the week and witnessed by an influential gathering of Government coal and engineering officials, and proved a very big success.

Coal Conditions at Durban.

The Usarvina, the first German cargo and passenger ship to visit Durban since the war, arrived there at the end of last week. This is the first of a series of nine vessels now under construction with a view to the recapture of Germany's African trade. There are now greatly increased orders for coal at Durban, those for last week aggregating some 66,000 tons, as against 67,000 during the previous week.

British Budget.

Mr. Chamberlain, in introducing the Budget, rightly claimed the past year was one of the most remarkable in the financial history of Great Britain. And nowhere is this more apparent than in the redemption of debt which has been achieved during the past twelve months, amounting in all to £259,500,000. Internal debt was reduced by £128,000,000 and floating debt by £17,000,000 to £1,161,500,000 as at March 31. Britain paid off in the United States during the year nearly £75,000,000, and in Canada £20,000,000, in addition to the payment of debts to Japan, Spain, Argentine, Uruguay and Holland. This is indeed a stupendous achievement.

The Transvaal's Provincial Finances.

The Administrator of the Transvaal Provincial Council presented last week estimates of revenue and expenditure for the Province for the year ending March 31, 1922. The surplus of revenue over expenditure on March 31, 1921, was £203,232, and the deficit on March 31, 1922, £431,069.

Nationalising the Mines.

In criticising the Budget last Friday, Mr. Sampson said it was impossible to pile more taxes on the industry than it already had without serious loss to the community. The House of Assembly overlooked the taxation the mining houses had to pay in the shape of miners' phthisis compensation, amounting to £1,000,000 a year. If the mines were to be taxed further, they would have to follow the lead of the miners in England and place themselves on a national basis. Rich and poor alike must be taken, and the profits pooled. Unless that were done, further taxation would only lead to the closing down of the low grade mines, and from the country's point of view the poor mine was as important as the rich in providing employment and in circulating money in the Union.

Bloemfontein Wool Factory.

At the general meeting of shareholders of the National Wool Industries of South Africa, Ltd., the Chairman, Mr. W. A. Badenhorst, stated that a deputation had been sent to Europe to inquire into conditions, with a view to purchasing the necessary machinery for the factory proposed to be erected at Harrismith. The deputation had instituted a thorough inquiry in England, Holland and Germany, and had returned with full particulars concerning the working of raw material and the costs of production. Tenders invited for the delivery of a full equipment of machinery with a capacity of 100 looms were £159,000 in England and £65,000 in Germany. The company decided to raise the necessary capital and to accept the tender from Germany. The necessary experts had also been engaged to come out with the machinery.

Effects of the Coal Strike in Britain.

During the month already covered by the strike the shortage of coal produced has amounted to over 14,000,000 tons, which is affecting industrial undertakings to a very serious extent. The iron and steel trades are especially suffering, and many more works have had to close down. All the railway companies have considerably reduced their services. Thirteen steel works and 17 blast furnaces have, it is reported, been closed down in Lancashire and 70,000 men thrown idle.

Some shipbuilding firms on the Tyne have decided to reduce the working days to four per week.

Owing to the unfavourable conditions now ruling, the Austin Motor Company has been obliged to call in the services of a well-known chartered accountant as receiver and manager, with a view to reorganising the company's finances.

Unemployment on account of the coal stoppage is rapidly increasing, and in some districts the distress is very acute.

Gold Mining in Scotland.

The lead miners at Leadhill and Wanlockhead, in Upper Lanarkshire, who are on strike against a reduction of wages —which the employers say is the only alternative to closing down—are prospecting for gold, of which small quantities have already been found in the streams and hollows. It is believed that with modern methods it is not improbable that gold may be found in paying quantities.

The Electricity Bill.

The Conference presided over by Sir Robert Kotze has concluded its inquiries in regard to redrafting the above, and it is gathered that the Bill will be much improved as a result of the sympathetic consideration given to various amendments put forward.

Gold Output of Rhodesia.

Gold output of Rhodesia for March was 31,995 oz., value £134,932, as compared with £150,293 for February. Of this Matabeleland contributed 16,380 oz., value £68,838, and Mashonaland 15,615 oz., value £66,094.

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Letters to the Editor.

ALUMINIUM AND BAUXITE.

To the Editor, *S A. Mining and Engineering Journal.*

Sir – I send you herewith for review the report on aluminium and bauxite which constitutes one of the parts of the digest of information on the mining industry of the British Empire and Foreign Countries for the period 1913-1919, which is being issued by the Imperial Mineral Resources Bureau

It is proposed to issue each part as it is completed, as it is considered that a more useful purpose will be served by so doing than by waiting for the completion of the whole digest The parts are not monographs on the respective minerals, but, rather are in the nature of synopses of the information available as to the mineral industry for the period under review.

Part IV. of the General Report of the Chief Inspector of Mines for the United Kingdom dealt with the mining statistics of the British Empire and Foreign Countries, but that publication ceased to be compiled and issued after the year 1912.

It is necessary, therefore, to fill in the gap in statistical information created by the cessation of that work, and for this reason the work of the Bureau has been devoted to giving some account of the progress of the mineral production of the Empire and of Foreign Countries over the period between 1913-1919.—I am, etc.,

L. W. HILL.
Director of Publications.

Publications Division,
H.M Stationery Office.
Westminster, London, S.W. 1.
5th April, 1921.

COMPANIES IN LIQUIDATION.

A Shareholder's Protest.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—In your " Notes and News " of 23rd April you bring up a point that has been exercising my mind for some time back, being, as it is, a shareholder in the Jupiter G.M Co., who lately disposed of their joint reduction plant for the, what appears to me, ridiculous figure of £110,000. The Jupiter's share of this plant was 120 stamps out of a total of 300, and the Jupiter's share showed in the last balance sheet issued in December, 1919, as £166,000. Now, we are told that the replacement value of plant today is about four times the pre-war price, and here we have material value about £500,000 disposed of for about one-fifth of its value.

Why is not the material of a mine in liquidation advertised and put up to auction and given to the highest genuine bidder in the interest of the shareholders, and if it is sold privately, the names of the buyers, the material sold and the prices realised – I am, etc.,

J. SIMPSON.

Gatooma, 27th April, 1921

Broken Hill Crisis.

In Melbourne it is authoritatively stated that the present programme of work at Broken Hill is unlikely to continue much longer. Except for zinc concentration, all plants contemplate closing, as there is no improvement in the metal market, and wages, coal, and transport are not reduced. Australian costs of production are considered 20 per cent. too high. There is no sign of the men offering to accept lower wages, but either cost of production must be lowered or the mines closed permanently.

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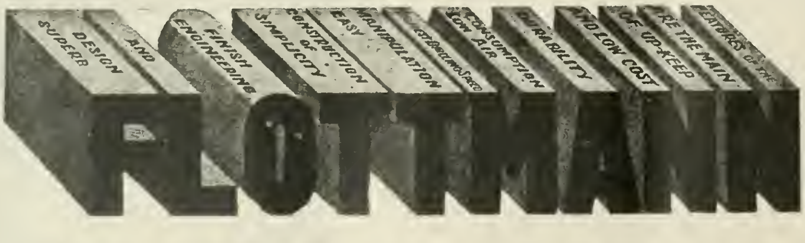

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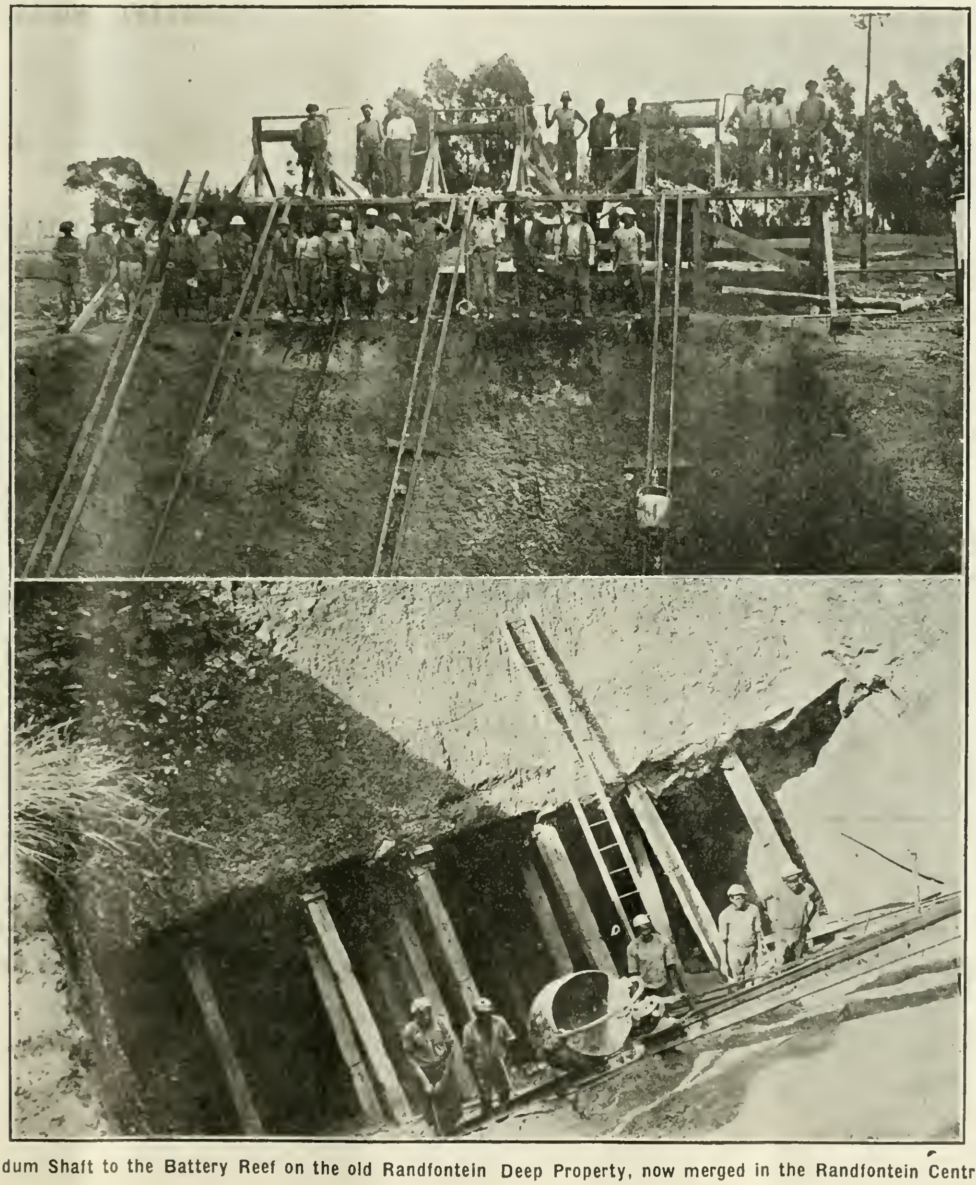
Vol. XXXI., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 14, 1921. No. 1546.

Opening Up the Battery Reef at Randfontein.



Lindum Shaft to the Battery Reef on the old Randfontein Deep Property, now merged in the Randfontein Central.

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The Vogel Deep Redivivus.

CLAIMS OF A DEFUNCT DEEP LEVEL REPEGGED—HISTORY OF A PAST FAILURE.

Some time ago the claims of the old Vogel Deep were thrown open for pegging by the Mining Commissioner, and several parties were soon on the scene. About two hundred claims were repegged by these bold spirits, and these are now being held in the confident hope that the outlay on claim licences, etc., will be amply repaid one of these days. The people who have now pegged the ground are said to have plenty of capital behind them. The property once known as the Vogel Deep lies, it will be remembered, between the Bantjes and the Roodepoort U.M.R. It has had a chequered history before being finally closed down and liquidated some years ago. Its official title was the Vogelstruis Consolidated Deep, Ltd., and it was registered in July, 1895, and reconstructions were effected in 1905 and 1908. Mr. S. C. Thomson was consulting engineer and Mr. W. Leyson manager. The capital was 229,250 £1 shares, and power to increase to £352,250. Messrs. Wernher, Beit and Company and Messrs. Neumann were interested. Prior to the financial reconstruction of January 25, 1905, the issued capital of the company was 393,000 £1 shares. One new share was given for each two shares held, and additional capital was issued In August, 1908, another reconstruction was arranged: 1 new share for 4 old—393,000 old shares = 98,250; new shares issued at par, 131,000; option to guarantors, etc., till November 12, 1910, at 22s. 6d., 131,000 shares.

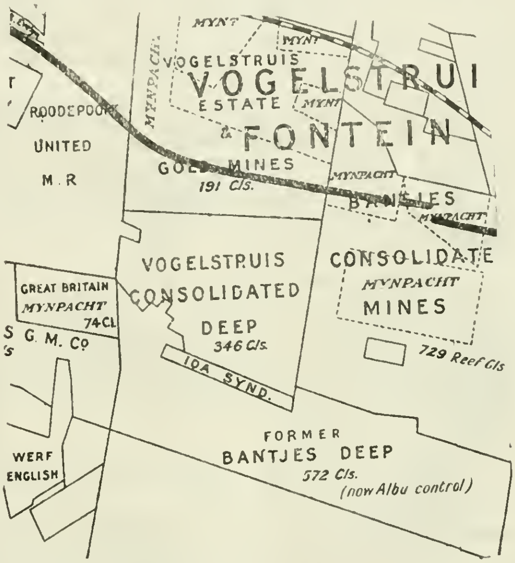
The property consisted of 346 claims, also 3 water-rights, lying east of the Roodepoort group. There were three shafts —the eastern, the central, and the western. In September, 1898 the Company struck the South Reef in its eastern shaft at 1,499 feet, and in January, 1899, by a cross-cut, what apparently was the Main Reef Leader was reached. Main Reef appeared to be about 200 feet distant from the South Reef. In February, 1899, South Reef was struck in the central shaft at 2,001 feet. The averages of South Reef were given previous to the war as under:—

Eastern section (614 ft. driven): Average of thickness, 13.4 ins.; average assay value, 12.9 dwts.

Central section (424 ft. driven): Average of thickness, 6.2 ins.; average assay value, 35.9 dwts.

The South Reef was narrow, and about one-third of the ore mined had to be "sorted," thus throwing the assays over a stoping width of about 30 inches. Development work was started in 1905 in the centre and west sections, which extend some 3,000 feet along the strike of the reef. The development going westward from the central shaft showed the ore to improve. On the Vogelstruis Estates payable ore was in the western part. Early in 1906, the South Reef, previously proved by the bore, was intersected in the west shaft itself at 2,676 feet depth. The width was 8½ inches, assay 45 dwts., or equal to 30 inches stoping width, value 12¾ dwts. By the middle of 1906 the financial resources were so reduced that work was stopped. The reconstruction of 1908 enabled the company to resume operations. At December 31, 1908, the ore in sight in the centre and west sections of the mine was estimated at 91,923 tons, of which 91,923 tons showed an average assay value of 8·94 dwts. per ton. This was increased at March 31, 1909, to: Centre section: Tonnage payable, 61,103; assay value payable, 8.69 dwts. West section: Tonnage payable, 42,066; assay value payable, 8.61 dwts. Totals and averages: Tonnage payable, 103,169; assay value payable, 8.65 dwts.

The best official description of the mine was that contained in the report for 1910, of the Consulting Engineer, Mr. P. Newhall, written after the mine had closed down. Inter alia, he said: "The operations carried out in the year did not result satisfactorily. From the 1st January to the 31st July, 51,452 tons were mined and hoisted, of which 19.81 per cent. was sorted out as waste. The 40 stamps ran 184 days and crushed 41,258 tons, the total yield from the mill and cyanide plant amounting to 12,436.7 fine ozs., equivalent to 6.029 dwts., or 25s. 2.876d. per ton. In addition, the final clean-up from the cyanide plant and mill returned gold to the value of £3,691. The working costs for the period under review averaged 29s. 10.521d. per ton, showing a loss of 4s. 7.645d. It is worth noting, however, that in January and February the working costs were 35s. 4d. per ton, and the yield 20s. 8d. and 24s. respectively, while the average yield for the remainder of the period was 25s. 2.5d. per ton, with average costs of 28s. 1d. The exceptionally high costs for the first two months were due to the difficulties and expense of training some 600 raw natives. The development operations for the year were principally confined to prospecting the Main Reef. The total footage accomplished was 1,776 ft. Of this 1,207 ft. was on the Main Reef, which assayed 3.70 dwts. over 61.07 ins., and 170 ft. was on the South Reef, which assayed 39.2 dwts. over 4.94 ins. The estimated payable ore reserves stand at date as follows: South Reef, 134,630 tons at 5.92 dwts., over 36.93 ins.; Main Reef, 14,900 tons at 5.96 dwts. over 69.72 ins. It is evident that before milling operations can be successfully carried on development must be largely extended on both South and Main Reefs. Mining and milling operations were suspended at the end of July, and the final clean-up was made early in August. All portable machinery and mining appliances on the property have been carefully stored, and the plant and houses placed in charge of a caretaker."



The Former Vogel Deep, now Re-pegged.

Following this the Company went into liquidation; the plant was sold up, and the mine stands to-day waterlogged, its surface marked by abandoned walls.

The Rhodesian Gold Mining and Investment Co., which incurred a loss of £130,529 last year and of £13,914 in 1919, is reducing its capital from £300,000 to £150,000, writing the £1 shares down to 10s

Premium Bonds : A Simple Scheme.

We are glad to be able to set out in detail below the memorandum on Premium Bonds by Mr. A. J. Yates, of the Johannesburg Stock Exchange, submitted by the Springs Chamber of Commerce to the Daggafontein Committee of Inquiry. It offers a simple, practicable solution of the problem of financing the country.

The question of Government premium bonds as a means of finance in South Africa has, from time to time been mooted in the Press of this country, but it cannot be said to have been received with any great degree of interest on the part of the public. Firstly through lack of knowledge as to what a premium bond really is, and secondly through apathy on the part of some sections as to any new suggestion.

Money is required for many purposes, and a loan which can be issued on a system which has stood the test of time in practically every European country, and which will redeem itself in the course of years by its own interest, may surely be regarded as sound finance. Furthermore, it is a loan which would be subscribed for by a class who seldom participate in Government loans, and would receive the support of many who pay but a small amount of direct taxation to the revenue of the Union.

If I shall not trespass on your time, I would like to outline a scheme which is very simple, and which differs from the French Municipal Bonds inasmuch as they reduce their interest on the bonds as they are redeemed, whereas in the plan now suggested the advantage the Union Government will gain (without militating against the issue) would be that all prizes and interest would be subject to Income, Super, and Excess Profit Tax.

The suggested scheme is as follows:—

An issue of five million pounds in ten-pound bonds carrying interest at 5 per cent.

Instead of paying the interest of 5 per cent. to the bondholders, the interest would be apportioned as follows:—

2 per cent. paid at half-yearly intervals to the bondholders, and the remaining 3 per cent., viz., £75,000 per half year, devoted to prizes.

Bonds to be cancelled by the drawing of a prize.

Under this system the Government will borrow £5,000,000, which will be liquidated by the payment of interest alone.

All bondholders will be certain, at some time or other, to draw a prize.

The Government to market these bonds on the Stock Exchange, and to quote them at, say, £9¾ buyers, £10 sellers.

The 3 per cent. would be distributed as prizes every half year on the following scale:—

1 prize of £5,000	£5,000
2 prizes of £2,500 each	5,000
2 prizes of £2,000 each	4,000
5 prizes of £1,000 each	5,000
10 prizes of £500 each	5,000
10 prizes of £250 each	2,500
50 prizes of £100 each	5,000
100 prizes of £50 each	5,000
1925 prizes of £20 each	38,500
	£75,000

The total amount distributed as prizes as shown in the foregoing equals 3 per cent. on £5,000,000 for the half year. Thus 2,105 bonds, value £21,050, would be automatically wiped out and discharged at the end of the first six months.

The following six months although the Government will still be under obligation to pay 5 per cent. (that is, 2 per cent. interest and 3 per cent. prizes) on five million pounds, this interest and prizes will only have to be distributed on 500,000, less 2,105—that is 497,895 (four hundred and ninety-seven thousand, eight hundred and ninety-five) bonds (the 2,105 having been wiped out at first drawing). The balance might be distributed among the remaining bondholders as special prizes, thus cancelling further bonds.

One can readily see that as time progresses the greater number of bonds will be cancelled by the additional number of prizes, the Government will be able to offer out of the interest accruing to the bonds already cancelled.

In about ten years' time a very large proportion of the loan will thus be cancelled, and this will have the effect of enhancing the value of the remaining bonds, as every six months there would be a greater number of prizes, to be distributed over a smaller number of bonds. In reality, interest will be accruing upon interest for the benefit of the remaining bondholders.

I might suggest that after, say, a period of ten years the value of the smaller prizes might be increased.

Instead of regarding this as a gamble, the scheme should be considered as an incentive to the public to save money. In France the issue of premium bonds has proved to be a great encouragement to the public to lend their money to the Government.

ELECTRICALLY WELDING A LARGE STEAM PIPE.

As an indication of the bold development of electric welding in Great Britain, nothing could be more striking than the jointing of a steel steam pipe one foot in diameter. The pipe is 1,600 feet long and all the joints were made by electric arc welding. After welding, the main was subjected to rigorous tests, and it has been in satisfactory use for some time carrying steam at the exceptionally high pressure of 250lb. to the square inch. This is the first time that so ambitious an application of electric welding has been made.

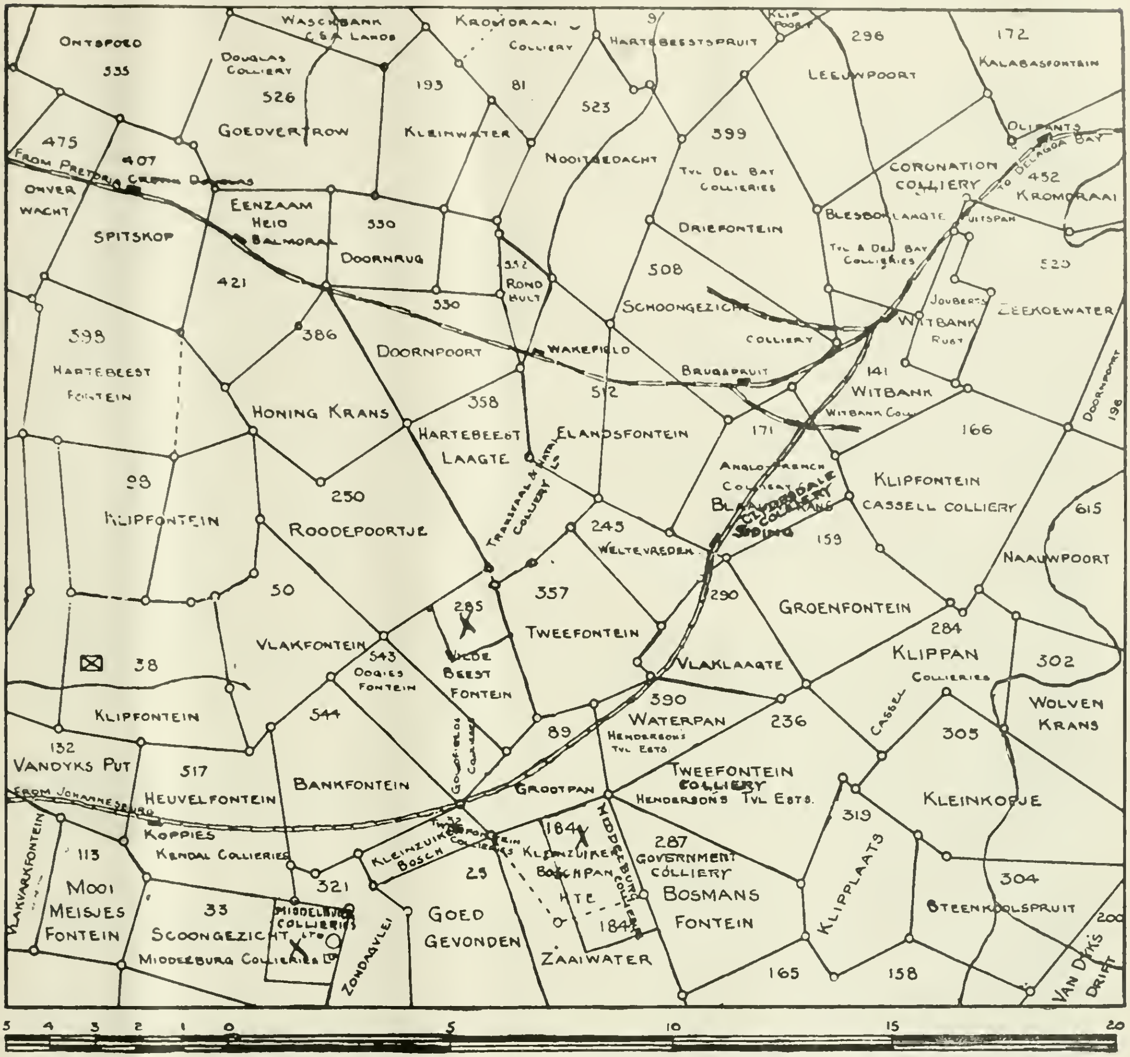
STANDARD FOR ASPHALT, BITUMEN, ETC., ON IMPORTATION.

The Union *Government Gazette* contains copy of Customs Notice No. 93, dated 18th January, 1921, stating that the Commissioner of Customs has approved of the following standard for asphalt, bitumen, pitch, and heavy oil, and preparations thereof for road or pavement construction, imported in bulk under item 76 (a) of the Customs Tariff: (a) Asphalt, bitumen and pitch, and preparations thereof, must contain less than 60 per cent. of mineral matter. (b) Heavy oils must be of such a nature that on heating at 160 deg. Centigrade for six hours they do not lose more than 10 per cent. of their weight. Goods of a standard approved by the Commissioner of Customs, when imported into the Union under item 76 (a), above referred to, are subject to a duty of 3 per cent. *ad valorem*, with a rebate of the whole duty when the produce or manufacture of the United Kingdom and reciprocating British Colonies.

Oil Prospects by Air.

Prospecting for oil by aeroplane in the uncharted wilderness which constitutes the delta of the Orinoco is about to be carried out for the British Controlled Oilfields, according to a report just published. The company has acquired oil concessions from the Government of Venezuela in the delta of the Orinoco, a region which is largely unexplored and where the ordinary methods of prospecting would be futile. It is considered, however, that the presence of oil should easily be ascertained from the air, since where it comes to the surface vegetation cannot live. A contract for the survey has been given to the Bermuda and West Atlantic Aviation Co., Ltd. The work will be carried out with seaplanes.

The Witbank Coal Fields.



A Useful Map of a Portion of the Middelburg Area, showing the principal holdings of Colliery interests. Van Dyk's Drift No. 200, the new "T.C.L." Colliery (dealt with elsewhere in this issue) is shown in the extreme left-hand corner. The position of most of the big producing collieries of the district is indicated.

The Slump.

Those who have been interested in the mining industry for a great many years (says the Financial News) declare they never remember a mining slump like the present. With every mine in Cornwall shut down, half the mines on the Rand threatened with closure on account of high working costs, and the fall in the price of gold, with five of the leading copper mines in the States shut down, with the Rio Tinto emerging from serious labour troubles and passing its dividend, with the Broken Hill still silent after eighteen months of industrial warfare and threatening to cease working permanently, with the Mason and Barry alone vital as the result of favourable exchange and good price for its products, with the Mount Morgan reported to be making a loss of £100,000 a year, there is absolutely nothing for the market to go for.

Gold Producers' Association.

His Majesty's Senior Trade Commissioner in Australia (Mr. S. W. B. McGregor) has forwarded to the Department of Overseas Trade a copy of a circular issued to shareholders of the Gold Producers' Association, Ltd., on February 10, in which it is stated that in January the association sold 19,448 ozs. of standard gold at an estimated average net price of £4 18s. 8d. per ounce (equal to £5 7s. 7d. per ounce fine). In addition, the local sales to manufacturing jewellers, etc., for the quarter ended December 31 amounted to 12,645 ounces, which realised £4 18s. 1½d. per ounce (equal to £5 7s. 0½d. per ounce fine). The circular also contains a table of prices showing the range of London quotations for fine gold weekly from July 1, 1920, to February 8, 1921.

The New Far West Rand Flotation.

SOME POINTS FROM THE REPORT OF THE LATE MR. J. S. CURTIS ON ITS MINING POSSIBILITIES.

In amplification of our remarks of a fortnight ago on the prospects of finding the extension of the Main Reef series south-west of the Western Rand Estates, we are glad to be able to publish the following extracts from the report, dated 1911, of the late Mr. J. S. Curtis on the subject.

In the course of his report on the eastern portion of the farm "Driefontein No. 591," Mr. Curtis wrote: "This farm is situate about six miles in a south-western direction from Bank Station, on the Kimberley-Johannesburg railway, forty miles from the latter place. The farm, 1,730 morgen (about 3,676 acres) in extent, is an excellent agricultural one, lying to the north of the Gatsrand range of hills, which are capable of furnishing all the water required for irrigation. It is, however, on account of its future as a probable mining proposition that this farm is chiefly valuable. To understand in what this value consists it will be necessary to examine the geology of the country from Randfontein, through the Western Rand Estates on to the west of the farm

Geology.

"Dr. Hatch divides the Witwatersrand beds into the upper and lower series. It is in the upper formation that the Main Reef is found. There is a great unconformity between the Witwatersrand beds and those above it, as will be seen by the accompanying section. Beginning with the Ventersdorp system, which overlies the Witwatersrand beds, the sequence upwards is the Potchefstroom system, consisting of the Black Reef, the dolomite and the Pretoria beds. This classification of Dr. Hatch is generally accepted by geologists and engineers in this country.

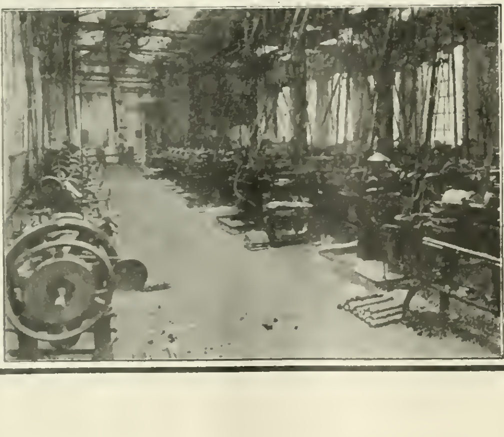
"These formations are not always to be met when a borehole is put down through the upper beds to prospect for the Main Reef. Sometimes one member, sometimes another and occasionally several members of the system are absent. After the last of the Main Reef workings on the southern portion of Randfontein go under the amygdaloid and Black Reef formations, there is probably no further outcrop of that reef until in the neighbourhood of Klerksdorp, but it has been cut in six boreholes out of nine in the ground of the Western Rand Estates. As these boreholes have an important bearing upon the probability of finding the Main Reef in the farm "Driefontein," I give a resume of them in the appendix to this report. There have been several boreholes put down north and south of the Gatsrand near the farm "Driefontein No. 591," and I have been able to obtain the data of some of them, which data I have also put in the appendix. These boreholes have been lettered 'a,' 'b,' 'c,' and 'd' but for the Western Rand Estates boreholes I have retained the numbers 1 to 9 given in the published reports of that company. I have marked on the plan what I estimate to be the approximate position of the sub-outcrop of the Main Reef. This sub-outcrop, judging from the boreholes put down in the neighbourhood, would lie from 1,500 ft. to 2,500 ft. below the surface. I have based my calculations in regard to the position of the sub-outcrop of the Main Reef on the farm 'Driefontein' upon the results obtained from No. 9 borehole on the Western Rand Estates and upon the fact that the Witwatersrand formation is plainly exposed to the north-east of Potchefstroom and can be easily followed to a point north of Klerksdorp, where, on the farm 'Cyferfontein,' a rich reef has been discovered, which, if not the Main Reef, is in all probability one of the gold-bearing reefs north of the Main Reef series. A line connecting this reef, the outcrop of the Witwatersrand formation north-east of Potchefstroom and No. 9 borehole would pass through 'Driefontein' in about the position I have shown on the plan. It might be contended that the overburden of dolomite in this region is too great to warrant the exploitation of the Main Reef. The expenses, however, should be no greater or but very little greater than those incurred in opening a deep level mine. Sinking a shaft in dolomite is sometimes a difficult matter on account of the water encountered, but with proper methods this obstacle can be overcome.

Drilling Recommended.

"The cost of thoroughly prospecting the farm 'Driefontein' by diamond drilling would be about £12,000, but before spending this amount it would be advisable either to acquire options over the mineral rights of the adjoining farms or to get the owners of these farms to pay a portion of the cost of boring.

"I have marked on the plan the spot I should recommend for the first bore. The position of subsequent holes would be determined by the nature of the formation encountered in the first hole. I can recommend this proposition as a reasonable mining risk."

In the detailed appendix to the report Mr. Curtis quotes the reef assays from the boreholes Nos. 4 and 9, where the leader ran as high as 240·5 dwts. over 5 inches.



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Diamond Trade Prospects

AN AUTHORITY'S VIEWS.

The future of the diamond market is of such vital interest to this country that we make no apology for reprinting here the views of a well-known authority on the subject.

The London correspondent of the "Cape Argus" says: The New York correspondent of the "Financier," writing on the day following Sir Ernest Oppenheimer's return to England, said: For some weeks past there has been very little activity in the diamond trade owing to rumours that the De Beers Company contemplates a cessation of mining operations in the early future, and also that large stocks of diamonds from Russia are still in the market and have to be absorbed before the syndicate can dispose of its accumulated stock. Whatever be the foundation for these rumours, the last few days have witnessed an improvement in conditions, owing to the presence in New York of Sir Ernest Oppenheimer, who has been able to reassure the trade leaders. He reaffirmed the policy of the London Syndicate, practically guaranteeing the maintenance of diamond prices. It is now reported that the controlling interests here have decided to hold all diamonds, cut and uncut, for a market return, which in any case is anticipated in the ordinary course of events.

The American Market.

In view of the importance of America to the prosperity of the diamond industry, a representative of the "Financier" asked Sir Ernest Oppenheimer for his impression of the position, and this authority expressed himself as follows: The quantity of brilliants taken by the United States forms such a large proportion of the production that it is the decisive influence in the industry A bad American market means a bad diamond market. All crises in the trade in gems have coincided with financial crises in the Atlantic. The Diamond Syndicate originated as a possible way out of the disastrous state to which the mines had been brought by the American financial collapse of 1893.

So satisfactory were the results achieved that what had been conceived as a temporary expedient was retained as a permanent institution. In recurring periods of difficulty since, the policy of the syndicate has enabled the industry to regain its former prosperity, and, indeed, has established it on a more solid and enduring basis. Never before has production been so effectively controlled. By the inclusion of South-West Africa within its orbit practically the whole of the world's output is aligned in accordance with the Syndicate's policy, and I have not the slightest doubt that, if left to ourselves, we shall pull through again.

It would seem that these bad times for the diamond trade move in cycles of seven years. In 1914, just before the war, we were threatened with trouble, but the closing down of mining in all directions on the outbreak of hostilities stopped production for a while, and the demand for gems that subsequently sprang up wiped out stocks, paving the way for the recent boom. Then American trade activity suddenly collapsed, and diamonds began piling up in our hands. Output has now been suspended, and stones are being held off the market, to give dealers and the trade a chance to dispose of the stocks in their possession. A revival mainly depends on how quickly business recovers in the Western Hemisphere.

From what I saw and learned during my visit I think the worst has been passed, and I look for a steady improvement, though perhaps it may be a few months before its effect is really felt. The trade may rest assured that, pending their disposal of the brilliants they have on hand, no attempt will be made to force rough diamonds on the market. There is not, and never has been, any intention of trying to increase consumption by reducing prices. Diamonds are a luxury, and such a measure would be futile—it would not help to sell a single carat, and would react detrimentally to the interests of all concerned. In the Autumn I think things will be brisker, with prices fully maintained.

Sub Nigel Development.

The quarterly report of the directors of the Sub-Nigel, Ltd., has the following: Development: 2,380½ feet were advanced on development during the quarter at a cost of £14,136, of which £13,629 was charged to working costs. Of the footage advanced, 1,855 feet were sampled, showing only 3.5 per cent. payable. This, however, was foreshadowed in the previous quarterly report. The 21st level drive east has been temporarily stopped, and a winze is being sunk from that drive in a direction that will cut the reef measures at right angles to the trend of the chutes in the "C" shaft area. This has been done with the object of obtaining as early information as possible with regard to the continuation of these chutes in the lower levels. The winze from 21st level west has been sunk to the horizon of the 22nd level and a new drive (22 west) has been started from the bottom of this winze with the object of picking up the values met with previously in the 21st level west. The auxiliary winze on the 18th level in the "C" shaft area has been continued a further 232½ feet at a cost of £2,922. A drive on the 19th level, eastwards from this winze, disclosed pay values at one point, but has since been in unpayable ground.

Rhodesia and the Strike.

The Rhodesian mineral output for March is notable for showing something of what the country lost as a result of the mines stoppage during that month. Though the trouble in March lasted only three weeks as a whole, the territory was throwing away money at the rate of several million pounds a year. The actual difference between the value of the mineral production in February and March shows a decrease for the latter month of £504,819. That is partly explained by exceptional figures in February, and is not dead loss to the mines, whose profits would be only a fraction of the total, but the sum includes much money which would have been circulated in the internal and overseas trade for payment of stores. "Without doubt," says the *Bulawayo Chronicle*, "that stoppage of the mines has hastened and increased for Rhodesia the period of restricted trade from which we are all suffering. But it is an ill wind which brings no good, and it is pleasant to record the existence on the mines of a much better feeling than had been seen for a very long period. With the conclusion of that unfortunate trial of strength has come a recognition by the workers that, after all, there was a good deal to be said for the managements, which had been carrying on to the best of their ability in face of very trying circumstances, while the managements probably see that the men are alive to the dangers of further handicapping an industry which most decidedly cannot stand many such set-backs. The gold output fell by nearly nine thousand ounces in March as compared with February, at a time when the shakiness of the premium threatens so much the less out of which to support current labour and future development. The gold production was nearly fourteen thousand ounces down as compared with March, 1920. The temporary suspension of labour as a result of the dispute moved ominously towards a more permanent stoppage as regards many of the mines and a large proportion of the workers. It was really the base minerals which prevented the retreat of production degenerating into a rout. Though the output of base minerals dropped from £480,442 in February (which included the exceptional sum of £328,410 realised from the asbestos adjustments of prices) to £130,886, there was an actual increase for these minerals of £64,691 as compared with March, 1920. The base mineral production certainly looks very promising, and should go far to balance the uncertain gold outlook, respecting which any further decrease in the temporary premium will be a matter of apprehension alike to the managements and the workmen, unless by some good fortune the mines can save more on the cost of stores and working than is possible at present. The restoration and improvement of our mining industry is a matter of concern to all Rhodesia, as well as to the mining managements and mine workers."

Another Solution of Mine Finance.

For the latest suggestion regarding the financing of mines in the developing stage we are indebted to the Springs Chamber of Commerce. In its statement before the Daggafontein Inquiry Committee recently, the Springs Chamber declared:—

"It is known that a large portion of the Daggafontein area is patchy, and therefore, it is suggested, in order to make Daggafontein a more attractive proposition, that the Government should give the company the right to lease, say, a further 500 claims of Government ground situated on the borders of the company's present mining area.

"It is thought that the company might be given a period of, say, three years in which to exercise the right to take up this additional ground, so that if good development is disclosed in any particular direction the company could increase its area in such direction. The terms on which the Government would lease the ground could be, no doubt, arranged with the company in a manner satisfactory to both parties.

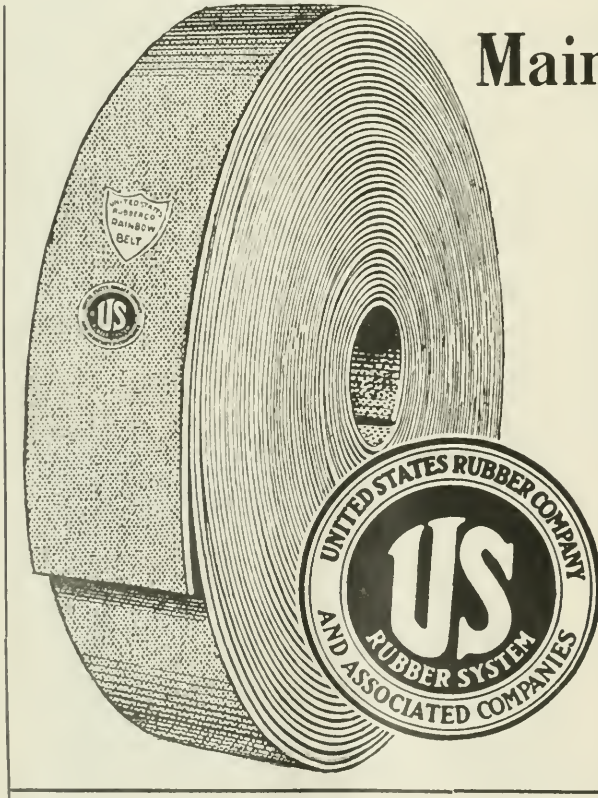
"From the evidence already led, it is clear that the provision of further working capital is difficult, and we feel that, in view of the present financial stringency and the low market value of the Daggafontein shares, it is useless to suggest any scheme for financing the company similar to the usual methods of raising capital for the exploitation of these fields. The times are abnormal, and therefore we have to look beyond methods which have been successful in the past.

"About three years ago a scheme for raising capital by means of premium bonds was submitted to the Union Government by Mr. A. J. Yates, of the Johannesburg Stock Exchange, and the Chamber has his permission to bring this scheme to the notice of the Commission, full particulars of which are contained in the memorandum by Mr. Yates printed elsewhere in this issue.

"It is suggested that the Union Government should raise funds by means of the issue of premium bonds, and that these funds be utilized for the benefit of assisting approved industrial undertakings when are languishing for want of capital. The Daggafontein Company falls within this description, and it is thought that the Government might advance funds from the proceeds of the issue of premium bonds to the company to enable it to carry on, the loan to bear interest at the rate of 5 per cent. per annum, interest and redemption to be payable in small annual instalments when the company starts producing. If the proposition should prove a failure and the Government loses the amount loaned, this would not constitute a charge on the revenue of the country because the loan would have been made out of the premium bonds, which, as shown in the attached schedule, redeem themselves. It is true that the Government would be liable for the interest payable to holders of these bonds, but this could be provided for out of the funds raised by the issue of the bonds in the first instance.

"The proposed financial assistance, together with the option to take over more claims from the Government, should make the proposition sufficiently attractive to encourage the controlling house to arrange for it to be financed in its later stages of development if the expenditure of the funds loaned by Government result in payable ore being disclosed.

A feature on the London Exchange during the week was the demand for the new Indian Loan, which has risen to 3½ per cent. premium.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The Result of the Daggafontein Enquiry.

POINTS FROM THE CONCLUSIONS OF THE COMMITTEE—CAUSE AND CONSEQUENCES OF CLOSING DOWN—SUGGESTED REMEDIES.

The report of the Committee of Inquiry into the closing down of the Daggafontein bids fair to prove an historic document, inasmuch as it raises fundamental questions concerning the future of the large undeveloped areas of the Far East Rand. In the following passages from the report we give the main conclusions reached by the Commissioners. It is unnecessary to follow them into the history of the property, as it is familiar to most of our readers. Other points raised by the report are dealt with separately in this issue.

" The only reason," says the report, " for the closing down of the mine is the exhaustion of the Company's funds and the impossibility in the present state of the world's finances of obtaining any further money, notwithstanding the strenuous efforts which have been made by the controlling house in this direction. There is no mining or technical difficulty which makes it impracticable to continue operations, and, provided further funds can be obtained by the Company, there is no reason why mining operations should not be continued. The Board of the Company has notified that as soon as financial conditions make it at all possible, they will endeavour to raise further funds for the Company in order that work may be resumed, but, until such time as these gunds may become available, the Company has no alternative but to suspend its mining operations, unless some other and immediate source for obtaining funds is found.

No Blame on the Company.

" During the course of the evidence, witnesses repeated to us certain rumours which have apparently gained wide currency in the district, alleging that the Company's quarterly and annual reports are not accurate, and that there is some sinister motive underlying the decision to suspend the Company's operations, unconnected with any statements published by the Company. Inasmuch as these rumours have caused considerable unrest and discontent amongst a certain section of the community in the district, we have thought it wise to take cognizance of them. No evidence whatsoever was adduced in support of any of the rumours, which we regard as entirely unjustified and unsupported by fact. On the contrary, we are satisfied that the Company has kept its shareholders and the public fully informed of the progress of its operations, and that the Consolidated Mines Selection Company has done everything in its power—at considerable financial risk—to advance the interests of the Company and of the district.

Conclusion.

" The closing down of the mine will increase the already large number of unemployed in the district, among whom are many returned soldiers. It will detrimentally affect the commercial community, and will, in our opinion, depreciate the potential value of the large undeveloped claim area of the Far East Rand. In addition, it may be mentioned that, consequent upon the closing of the mine, the supply of water to the system of the Rand Water Board will be seriously diminished, i.e., to the extent of some ten million gallons per month, representing the amount taken by the Rand Water Board from Daggafontein Mines while the Company is in operation.

" It was strongly urged upon us that the Government should immediately afford the Company financial assistance by lending it a sum of money sufficient to enable mining operations to be carried on to the producing stage without interruption. It was suggested that the Government should provide the necessary funds—

" (1) By utilizing for the purpose a sum of money out of its share of the profits from producing mines in the district; or

" (2) By raising a loan by means of a scheme of Premium Bonds, the said loan to be sufficiently large to afford financial assistance not only to Daggafontein Mines, Limited, but also to other mines and industries which may have to suspend operations in the near future for a similar reason.

Relief Measures.

" It was further suggested, in order to render the Company's prospects more attractive to potential investors, and to afford it a better chance of raising fresh funds, that the Government should grant the Company the following relief:

" (1) A reduction in the sliding scale of its participation in the Company's profits.

"(2) By allowing the Company to exchange certain claim areas in the vicinity of the No. 1 Shaft, which have been found unpayalbe, for an equivalent area on Government ground in a more favourable position adjacent to the Company's property.

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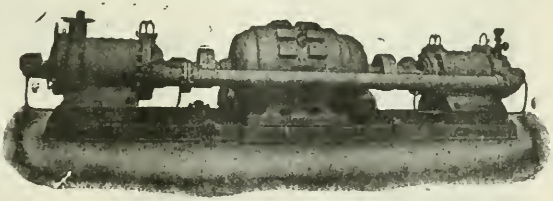

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"(3) By the remission of claim licences and other direct Government taxation, until the Company has reached the producing stage.

"(4) By lessening the burden of indirect taxation, as, for instance, railway rates on coal, etc.

"An ingenious scheme of Premium Bonds, to be guaranteed by the Government, has also been suggested as a desirable means for financing the Company. This scheme was supported by the majority of witnesses who gave evidence, and an outline of same, as submitted by the Springs Chamber of Commerce, is attached hereto.

Too Speculative.

"Although it recognises that the mining industry has a paramount claim upon the Government for consideration by reason of its magnitude and its supreme importance to the country, it is felt by this Committee that a recommendation for financial assistance could only be extended in connection with enterprises which have an assured prospect of success, and the Committee feel that however attractive such schemes may appear to individuals, their adoption by the Government cannot be recommended in connection with Daggafontein Mines by reason of the speculative security offered.

"In view of the fact that only a portion of the available area of the property has been exploited, it is reasonable to assume that in the event of the adoption of an energetic and extensive development policy in the potentially more valuable western portion of the property, the mine might be brought to a successful issue, and it is for this reason that your Committee confidently anticipates the reopening of the mine at a future date, when better financial conditions render such a course possible.

To Help Raising Funds.

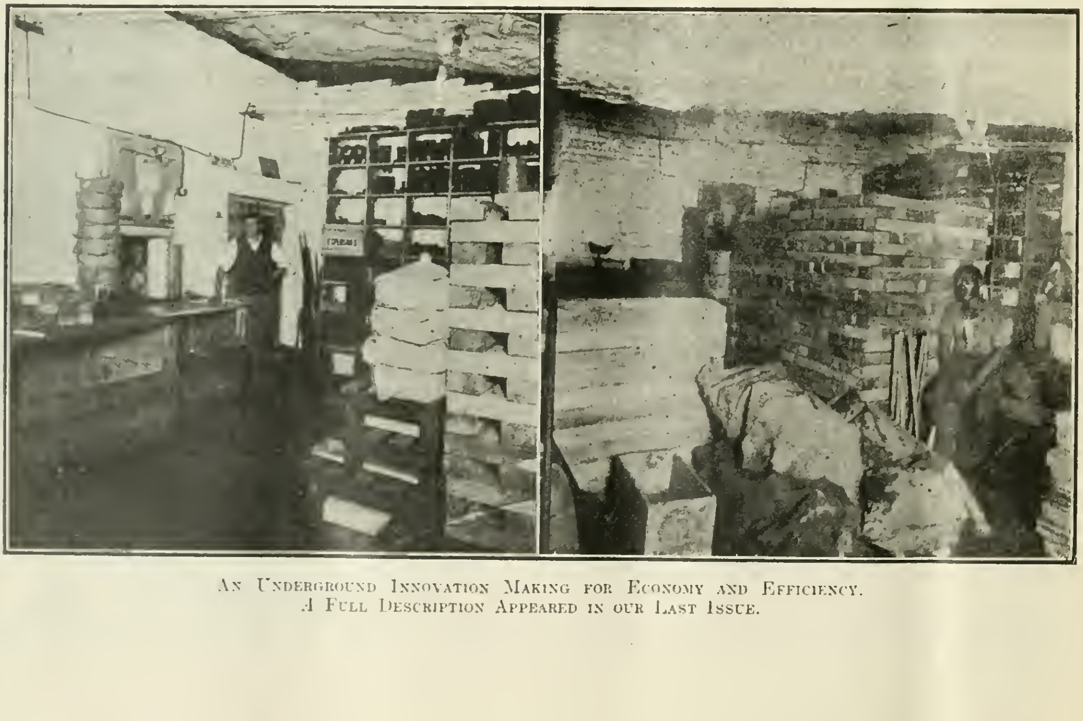
"In this connection, your Committee recommends that the further raising of funds by private enterprise may be very much falicitated by the Government assisting as follows: By allowing the Company to exchange certain claim areas in the vicinity of No. 1 Shaft, which have been found to be unpayable, for an equivalent area on ground in a more favourable position adjacent to the Company's property. There is no doubt that for the establishment of a successful mining enterprise, the remaining virgin claim area now held by the Company should be added to in this way.

"The Government should also assist by a reconsideration of the minimum scale laid down in the Mining Areas Act, as this minimum scale is based on the premises of conditions which no longer exist, especially in respect to the area under consideration."

Minority Report.

Mr. J. Cowan writes in a minority memorandum: "The undersigned member of your Committee regrets that he is unable to agree with his fellow Committeemen in respect to the following statement: 'The Committee feel that however attractive such schemes may appear to individuals, their adoption by the Government cannot be recommended in connection with Daggafontein Mines by reason of the speculative security offered.' On the contrary it is in his opinion highly desirable that, under the special circumstances of this case, the Government, for the following reasons, should advance to the Company the necessary money by the purchase of shares in the enterprise from the Company in order: (1) To prevent further unemployment and to create additional employment; (2) to prevent the hardship and loss which will be felt by the commercial community of the district; (3) to prevent a serious prejudice against the potential value of the Government's unoccupied claims in the Far Eastern Rand, and thereby improve the chances for the Government of leasing these areas and establishing new mines. In submitting this Minority Report, I should like to make special mention of the insinuations levelled at the Daggafontein Mines, Limited, and the Consolidated Mines Selection Company, and to state here that nothing in the evidence submitted, or arising therefrom, affords even the slightest proof of or justification for such insinuations. Further, I should like to tender my thanks to these Companies for the manner in which they have rendered assistance to the Committee."

UNDERGROUND STOREROOM AT THE MODDER DEEP.



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The April Output in Detail.

INCREASE OF 10,259 OZS.—NATIVE LABOUR SUPPLY LESS—SOME NOTABLE INCREASES IN PRODUCTION

An increase of 10,259 ounces in the Transvaal gold output was announced by the Chamber of Mines this week, the totals for the past two months being: March, 671,123 ounces; April, 681,382 ounces. The value of the April output has been estimated at £3,534,669, as against £3,481,450 for March.

The output totals for April compared with those for the previous month are as follow:

Witwatersrand.

	Ounces.
March	656,572
April	665,309
Increase	8,737

Outside Districts.

March	14,551
April	16,073
Increase	1,522

Grand Total.

March	671,123
April	681,382
Increase	10,259

Native Labour.

The number of natives employed on the Transvaal gold mines at the end of April was 172,826, as against 174,364 in March—a loss of 1,538 boys. The totals for the past three months are:

	February.	March.	April.
On gold mines	171,518	174,364	172,826
On coal mines	14,697	14,906	14,908
On diamond mines	1,612	1,364	1,316
	187,827	190,634	189,050

Company Returns.

	Ounces.	Increase.	Decrease.
Aurora West	2,863	11	—
Brakpan Mines	22,476	137	—
City Deep	35,385	—	1,199
Cons. Langlaagte	12,554	521	—
Crown Mines	54,569	3,251	—
Cons. Main Reef	16,574	—	185
Durban Deep	8,909	131	—
E.R.P.M.	36,129	1,859	—
Ferreira Deep	10,812	522	—
Geduld Proprietary	15,150	—	209
Geldenhuis Deep	13,099	318	—
Government Areas	55,491	910	—
Knight Central	7,203	1,025	—
Langlaagte Estate	12,004	—	4
Luipaardsvlei Estate ...	4,231	673	—
Meyer and Charlton	8,099	—	761
Modder B.	30,677	1,477	—
Modder Deep	22,916	107	—
Modder East	10,156	—	274
New Goch	3,905	—	80
New Kleinfontein	13,114	—	183
New Modder	43,561	447	—
New Primrose	4,580	—	123
New Unified	2,711	163	—
Nourse Mines	4,529	191	—
Randfontein Central ...	35,337	—	801
Robinson	7,835	21	—
Robinson Deep	18,022	743	—
Roodepoort U.M.R.	14,350	1,097	—
Rose Deep	13,180	309	—
Simmer and Jack	14,469	929	—
Springs Mines ...	18,631	—	145
Van Ryn Estate	9,583	309	—
Van Ryn Deep	27,105	314	—
Village Deep	14,863	219	—
West Rand Consolidated...	9,373	—	183
Witwatersrand	9,604	363	—
Wit. Deep	10,318	—	285
Wolhuter	8,078	—	213
Miscellaneous	2,864	—	2,665

Outside Districts.

	Ounces	Increase	Decrease
Sub Nigel	6,043	486	—
Glynn's Lydenburg	1,297	298	—
Transvaal G.M. Estates ...	5,193	686	—
Miscellaneous	3,540	52	—

Group Profits.

	February.	March.	April.
Central Mining	£196,241	£335,678	£362,448
Barnato	187,423	253,627	261,506
Gold Fields	10,817	19,617	31,556
General Mining	19,296	36,070	34,830
Mines Selection	49,859	73,234	69,749
Union Corporation ...	90,933	95,234	96.707
Totals	£544,567	£813,460	£856,796

Monthly Output Totals.

	Ounces.	Value.
January	651,593	£3,420,863
February	558,137	2,895,336
March	671,123	3,481,450
April	681,382	3,534,669

Large Orders for Natal Coal.

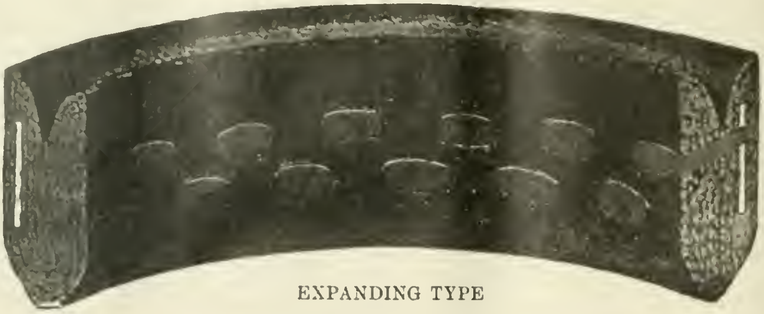
The coaling trade at Durban has been distinctly slack for some weeks past. The collieries of the Garden Colony have felt the world-wide trade depression acutely, and, until the other day, large quantities of coal stored at the Bluff were awaiting purchasers. Just recently, however, the coal trade at Port Natal has undergone a complete change again. During the fortnight orders for 110,000 tons, to be delivered to shipping at Durban by May 7th, have been booked. There is a large amount of shipping in Durban harbour at the present moment, and the harbour authorities are kept very busy. To what extent the renewed demand for Natal coal is due to the strike in Great Britain is hard to say, but the fact remains that the collieries are now much busier than they have been for some weeks past, and it is hoped and believed that the demand will continue for some time to come.

* * * *

Anglo-French Chairman and the Outlook.

At the Anglo-French Exploration Company's meeting in Mail week, the Chairman, Mr. F. A. Robinson, spoke with mild hopefulness as to the prospect of reducing Rand working costs this year. He adhered to the general opinion that gold will command a premium for some years to come. Both Mr. Robinson and the managing director of the company in South Africa, Sir William Dalrymple, are convinced that "with any improvement in conditions generally we must see an appreciation in gold mining shares." As regards the Anglo-French Company's own position, the view was expressed that the current market quotation is unduly low in the face of the fact that the capital of the concern is intact, even after what Mr. Robinson described as "the greatest slump in history."

—This—



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April Gold Output : Group Returns.

CENTRAL MINING/RAND MINES GROUP.

Company	Tons crushed.	Yield in Fine Gold Ozs.	Estimated Value.	Estimated Profit.	Estimated Working Costs per Ton.
City Deep	80,000	35,385	£182,518	£56,774	31 5
Cons. Main Reef	18,000	16,574	85,563	6,927	32 9
Crown Mine. ..	192,000	54,343	280,545	40,639	24 11
Dur. Rood. Dp.	26,550	8,892	45,663	414	34 1
E.R.P.M.	135,000	36,129	186,518	10,038	26 4
Ferreira Deep .	31,800	10,792	55,717	12,768	27 0
Geldenhuis Dp..	49,765	13,099	67,418	*3,044	28/ 3
Knight Central..	26,800	7,203	37,150	4,296	24 6
Modder B.	58,000	30,677	158,368	85,080	25 3
Modder East ...	25,700	10,156	51,285	11,366	31 0
New Modder ...	96,000	43,561	224,885	113,706	23 1
Nourse Mines ..	46,000	14,350	73,959	4,773	30 1
Robinson	39,000	7,835	40,446	1,607	19 11
Rose Deep	54,500	13,180	68,043	8,739	21 9
Wolhuter	31,700	8,078	41,704	3,717	23 11
Village Deep ...	18,600	14,862	76,730	4,648	29 8
Tls. & averages	989,415	325,116	1,676,512	362,448	26/ 6

* Loss.

City Deep: Decrease due mainly to loss of tonnage occasioned by an overwind at No. 2 shaft.

Modder East: 32,550 tons handled at the mine, of which 17,936 were from stopes, 2,412 sorted at the mine: total transported to Apex, 30,138.

General. The valuation of gold has been taken at £5 3s. 3d. net per fine ounce.

BARNATO GROUP.

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.
Consolidated Langlaagte ...	100	43,000	£65,123
Government Areas	200	136,000	287,860
Langlaagte Estate	200	38,400	62,270
New Primrose	115	21,500	23,759
New Unified	60	11,300	14,062
Randfontein Central	500	128,500	183,309
Van Ryn Deep	90	50,400	140,608
Witwatersrand	215	36,000	49,820
Totals and averages ...	1,480	465,100	£826,811
March totals	1,130	453,200	£819,850

Mine.	Total Working Costs.	Working Costs per Ton Milled Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ...	£51,723	24·057	£13,685
Government Areas	145,810	21·443	142,781
Langlaagte Estate	52,365	27·273	10,256
New Primrose	22,136	20·592	1,784
New Unified	11,541	20·426	2,576
Randfontein Central	174,272	27·124	10,308
Van Ryn Deep	68,967	27·368	73,050
Witwatersrand	44,446	24·692	7,066
Totals and averages ...	£571,260	24·565	£261,506
March totals	£572,527	25·265	£253,627

Note.—The above results are arrived at by calculating the gold at £5 3s. 9d. per fine oz.

Monthly Gross Profits.—January, £269,638; February, £187,423; March, £253,627; April, £261,506.

CONSOLIDATED GOLD FIELDS.

Company.	Stamps. Running.	Tube Mills.	Tons Crushed.	Gold declared. Fine ozs.	Profit.
Simmer and Jack ..	320	7	60,600	14,469	£9,604
Robinson Deep	165	10	61,300	18,022	14,688
Sub Nigel	30	2	9,900	6,043	7,264
Totals	515	19	131,800	38,534	£31,556

Gold in reserve.—Simmer and Jack, 500 ozs.; Sub Nigel, 2,134 ozs.; total, 2,634 ozs.

The revenue derived from gold for the month of April is calculated at the rate of £5 3s. 9d. per fine oz., less estimated gold realisation and exchange charges of 6d., or a net figure of £5 3s. 3d. per fine oz.

ROUXVILLE DIAMONDS.

April output: Loads washed, 1,498; number of stones recovered, 231; total weight, 127¾ carats.

CONSOLIDATED MINES SELECTION GROUP.

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled.
Brakpan Mines	110	55,000	27/ 8·87
Springs Mines	80	42,000	30/ 8·84
Totals and averages	190	97,000	29/ 0·45

	Value of Gold declared.	Yield per Ton.	Working Profit based on standard value of Gold.	Working Profit per Ton.
Brakpan Mines ...	£94,591	34/ 4·76	£18,308	6/ 7·89
Springs Mines ...	78,634	37/ 5·34	14,086	6/ 8·50
Totals and averages	£173,225	35/ 8·60	£32,394	6/ 8·15

	Estimated Premium. taking Gold at £5 3s. 9d. per fine oz.	Total Estimated Profit.
Brakpan Mines	£20,441	£38,749
Springs Mines	16,914	31,000
Totals and averages	£37,355	£69,749

UNION CORPORATION GROUP.

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Total Revenue.	Revenue per Ton.
Geduld Proprietary..	100	44,000	15,150	£78,689	35 9
Modder Deep	70	42,600	22,916	118,926	55 10
Totals	170	86,600	38,066	£197,615	—

Company.	Costs. Total.	Costs. Per Ton.	Profit. Total.	Profit. Per Ton
Geduld Proprietary ...	£54,252	24 8	£24,437	11 1
Modder Deep	46,656	21 11	72,270	33 11
Totals	£100,908	—	£96,707	—

The above results are arrived at by calculating the gold produced at £5 3s. 9d. per fine oz. Realisation charges in excess of normal are debited direct to revenue.

TRANSVAAL G.M. ESTATES.

The following are the particulars of the output for the month of April, 1921, in respect of this company: Central Mines: Tons crushed, 12,000, yielding 3,814 fine ozs. Elandsdrift Mine: Tons crushed, 1,500, yielding 870 fine ozs. Vaalhoek Mine: Tons crushed, 1,530, yielding 507 fine ozs. Estimated value of month's output, £26,583; estimated profit for month, £3,095. The month's results are based on value of £5 2s. 9d. net per fine oz. A loss of £1,100 was made at Vaalhoek due to fall in grade and effects of cyclone at the end of March.

GENERAL MINING & FINANCE GROUP.

Company	Tons Crushed	Total Cost	Cost per Ton	Total Revenue.	Profit
Aurora West	10,800	£14,026	25·97	£14,687	£661
Meyer & Charl	14,000	18,592	26·56	41,605	23,013
New Goch	17,000	19,443	22·87	20,297	854
Roodepoort Un	23,800	25,238	21·21	23,419	*1,819
Van Ryn Est	31,520	41,481	26·32	49,505	8,024
West Rand Con	32,200	44,184	27·44	48,281	4,097
	129,320	£162,964	25·20	£197,794	£36,649
				Less loss	1,819
					£34,830

* Loss.

In calculating the revenue, gold has been taken at a value of 103s. 9d. per fine oz., less estimated realisation charges.

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of April, 1921, in respect of the above company: Tons crushed, 3,533, yielding 1,297 fine ozs.; estimated value of month's output, £6,686; estimated profit for month, £1,237. The month's results are based on a value of £5 2s. 9d. per fine oz. net.

WIT. DEEP.

The estimate of results for the month of April, 1921, is as under: Tons milled, 35,000; gold recovered, 10,317·981 ozs.; average number of stamps running, 165; stamps running time, 23·081 days; tube mills, 5; development footage, 339. The working expenditure, including head office charges, for the month is £46,190, or 26s. 5d. per ton. The estimated working revenue, based on an estimate of £5 3s. 9d. per fine oz. (less 6d. realisation charges), is £53,267, or 30s. 5d. per ton. The estimated working profit is £7,077, or 4s. per ton, from which is to be deducted the capital expenditure for the month of £1,468, leaving a surplus of £5,609.

SOUTH-WEST DIAMONDS.

The secretaries report that the output for the month of April amounted to 532 carats, the stones being of exceptional quality.

The number of prospecting permits issued by the Mines Department in respect of the Johannesburg Mining Commissioner's district, jumped from 64 at June 30, 1920, to 107 at March 1, 1921.

New Patents.

(1) Anders William Lindburg, Ferriera Deep Ltd., Johannesburg, (2) William Andrew Tester, Corner House, Johannesburg.—Improvements in smelting methods and furnaces therefor.

John Edwin Webster, Rietfontein, P.O. Brakloof, Rustenburg, Transvaal.—An improved safety device for use in skips, and the like, used in mines, mining operations and the like.

(1) Henry Selby Hele-Shaw, 92 Colherne Court, London; (2) Ernest Tribe, 64 Victoria Street, London, S.W.—Improvements in and relating to pipe joints.

Thomas Parker, Glencoe (Natal Collieries), Ltd., Hattingh Sprnit, Natal.—Endless rope haulage clip.

MINES DEPT. EXAMS., 1920.
CERTIFICATES AWARDED INSTITUTE.

SURVEYOR'S CERTIFICATES—March, July and Octobe. (Extra) Exams 100 %, 50 % and 60 % respectively of S.A. total

MANAGER'S CERTIFICATES.—Two last Exams. (Sept., Jan.) 17 out of total 28 in S.A

OVERSEER'S CERTIFICATES.—Two thirds of the S.A. total for year 1920 75 % for January, February, March, 1921.

COAL CERTIFICATES.—Candidates being enrolled

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St.

Concerning Mines and Men.

Congratulations to Mr. Scott Alexander, "The Rand Stratigraphist," who was 73 last Monday.

* * * *

Mr. W. C. A. Shepherd, of Messrs. Allen, Wack & Shepherd, Ltd., is on a business visit to the Rand.

* * * *

Congratulations to M. Jourdan, the well known director of Rand companies, on being decorated with the French Order of Merit.

* * * *

Mr. Max Tilliard, who was acting manager of the New Modder during Mr. Miles Sharp's absence, left this week on a well-deserved holiday in Europe.

* * * *

Dr. F. H. Hatch has been appointed by the Secretary of Mines to be technical adviser to the department on questions relating to the English metalliferous mining industry.

* * * *

Mr. M. Lichtenstein left for Australia this week in connection with the flotation in that country of a subsidiary company to take over the Australian rights of Penrol.

* * * *

Major Peake, the well known director of several colliery and engineering enterprises in England and of the Vryheid Coal and Iron Co., paid a visit to the Rand last week.

* * * *

The following appears in the "Gazette": It is hereby notified, for general information, that the Union Government do not intend, in the event of the voluntary default by Germany in the performance of her obligations under part 8 of the Treaty of Peace, to exercise their rights to seize the property of German nationals in the Union, under paragraph 18 of annex 2 to that part of the Treaty.

* * * *

The Right Hon. F. S. Malan, Minister of Mines and Industries, in opening the conference of the Advisory Board of Industry and Science, at the new Law Courts in Johannesburg last week, said he was pleased to use the opportunity of his being in Johannesburg to open the third conference of the reconstituted Board. He thought they saw more clearly now the directions in which the work of the Board would develop. A permanent section of the work which was hived off, and would continue to be so, was research work. The Research Board, which really was technically a committee of the Advisory Board, had done excellent work and he expected that as time went on that the value of its activities would become more generally recognised and appreciated. Mr. Malan dealt at length with the functions and powers of the new Tariff Board.

An Effect of the Diamond Slump.

Sir Bernard Oppenheimer, the principal director of the important diamond-cutting factory recently established at Brighton, at which a large number of specially-trained ex-service men are employed, and an institution in which the King, the Prince of Wales, Earl Haig, and many other distinguished persons have taken a great interest, has announced that it is necessary to put the works on short time. Sir Bernard explains that during the past six months his sale of diamonds had realised £2,000 only, whereas the expenses of keeping the factory going were £3,000 per week. It was impossible, he said, to continue under such conditions. The mines in Africa were shut down, and only 20 per cent. of the men on the Continent were in full employment. It was almost impossible to obtain advances either from the Government or the banks, although he had £1,300,000 worth of diamonds as security. Much regret is felt at the necessity for curtailing the hours of work, but the situation is rendered inevitable. The special clinic department for the treatment of disabled ex-service men would remain in operation during the period of short time. It was hoped that before long the industry would be once more in full swing. It is understood that the men promised to stand by the directors until matters had improved.

Mine Ventilation.—II.

By E. C. RANSON (METALLIFEROUS AND COLLIERY MANAGER'S CERTIFICATES, MINING KING'S MEDALIST).

As no fan is perfect, owing to various causes, one of which is its inability to discharge air into the atmosphere without speed, the theoretical depression is never attained. The total actual depression, or what is known as the "initial depression" of a fan, is less, depending upon the efficiency of the fan to create depression. This proportion of the "initial depression" to the theoretical depression" is termed the manometrical efficiency of the fan, and varies from 0·5 to 0·9.

Initial Depression.

To explain the "initial depression" more fully. If a fan at uniform speed was exhausting from a closed chamber, eventually it would exhaust all the air from the chamber, and would have to spend its whole power to keep at bay the pressure of the outer atmosphere. When this occurred, if a water gauge was connected to the closed chamber, and the outer atmosphere, it would register the "initial depression" of the fan at that speed.

The "effective depression" of the fan, which I mentioned previously, is the depression, expressed in terms of inches of water gauge actually observed in the fan chamber. It is such portion of the "initial depression" expended in driving the air through the mine against the resistance of the mine.

Air in passing through a mine is affected in the same way as air passing through an opening or orifice in a thin plate; owing to *vena contracta*, the quantity of air flowing through the orifice is 0·65 of the theoretical quantity, found by multiplying the area of the orifice by the velocity. This opening in a thin plate, which in passing a certain quantity of air registers a water gauge, equal to that produced by the same quantity of air passing through the workings of the mine, is termed the "equivalent orifice" of that mine. The equivalent orifice of any mine can be calculated by the following rule:—

$$A = \frac{{\cdot}0004Q}{\sqrt{W.G.}}$$

Q = Quantity of air in cubic feet per min.
A = Area of orifice in square feet.
W.G. = Water gauge in inches.

Air in passing through the fan is also affected in the same way, so that we have another opening for the mine air to traverse, namely, the "equivalent orifice of passage."

Approximate rule:

Orifice of passage = C × area of inlet.

C varies from 0·8 to 1, according to design of fan, obstruction of vanes, etc. To get the maximum work out of a fan, the ratio of the orifice of passage of the fan, to the equivalent orifice of the mine, is very important. To obtain the greatest efficiency, the orifice of passage should be about three times the equivalent orifice of the mine.

Determining the Size of the Fan.

With a little thought and calculation, it is possible to determine with a fair degree of accuracy the size of fan to adopt to obtain certain results. It is first of all necessary to know the quantity of air that will be required for the particular mine in question, and to have some idea of the depression or water gauge to produce it from such mine. From these figures the equivalent orifice of the mine can be calculated by the rule given above. From this result a suitable orifice of passage can be determined, and by a little further calculation the size of fan, speed, etc., can be ascertained.

An Example.

As it is important that one should know how to set about determining the details and size of fan to instal to ventilate any mine, I will work out the following example:

What size of fan would be required to produce 200,000 cubic feet of air per minute with a W.G. of 4in. The type of fan decided upon being a Sirocco double inlet?

Assume the manometrical efficiency of Sirocco = 0·9.

Say orifice of passage = three times the equivalent orifice of mine.

It has been proved mathematically that the proportion of the "effective depression" to the "initial depression" of any fan is governed by the ratio of the orifices of the fan and mine. When the orifices are as 3 to 1, as we have decided upon, the "effective depression" is 0·9 of the "initial depression," or, to transform, the "initial depression equals $\frac{10}{9}$ of the "effective depression."

Effective depression = 4in. W.G. = 68 × 4 = 272 feet of motive column.

$\therefore$ Initial depression $= 272 \times \frac{10}{9} = 302$ feet of motive column.

Rule to determine tangential velocity of fan:

$$V = \frac{\sqrt{H\,g}}{K}$$

V = Tangential velocity in ft. per second.
H = Initial depression of fan.

$$\therefore V = \frac{\sqrt{302 \times 32{\cdot}2}}{0{\cdot}9}$$

K = Manometrical efficiency of fan.
g = 32·2 (acceleration constant).
$= \sqrt{10{,}805}$
$= 104$ approx. $\therefore 104 \times 60 = 6{,}240$ ft. per minute.

For this velocity an 8 ft. fan would have to make

$$\frac{6240}{8 \times 3{\cdot}1416} = 250 \text{ revolutions per minute.}$$

This is just an ideal speed for an 8 ft. Sirocco fan, so that if the orifices of the fan and mine are in anything like the ratio we want, namely, 3 to 1, it will suit splendidly.

$$\text{E.O. of mine} = \frac{{\cdot}0004\,Q}{\sqrt{W.G.}} = \frac{{\cdot}0004 \times 200{,}000}{\sqrt{4}} = \frac{80}{2}$$

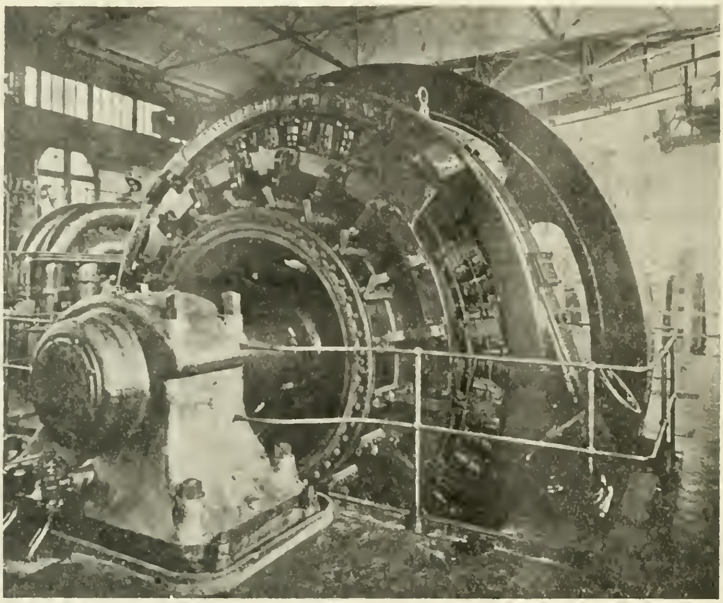
$= 40$ sq. ft.

Orifice of passage of 8 ft. Sirocco (double inlet) $= 2(8^2 \times {\cdot}7854)$
$= 100$ sq. ft.

$\therefore$ Orifice of passage to orifice of mine is as $2\frac{1}{2}$ to 1; not quite 3 to 1 that we decided upon, but nevertheless a very satisfactory proportion. The fan to lay down to give practically the maximum efficiency would therefore be an 8 ft. diameter, double inlet Sirocco, and run at 250 revolutions per minute.

I now want to go into the disadvantages of placing a fan in the middle of the circuit, and to show what really happens when it is so placed.

(To be continued.)



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The Tin and Coal Mines of the Congo.

In the following brief but important article, M. Rousseaux, the well-known Brussels writer, describes the tin and coal properties in the Congo belonging to the Liège Company, known as Géomine, Ltd.

As a result of the prospecting so scientifically carried out by Mr Minette d'Oulhaye, the Géomine is a tin and a coal producer. Tin is produced at Manono and at Kitotolo, both these fields being situated in the Lukusi block (the Lukusi is a tributary of the Luvua River, which is connecting Lake Mwero with the Upper Lualaba). Two engineers, twelve overseers, and 700 natives are there at work. The production of these fields is shipped from Muyumba, a place on the Lualaba River, south of his confluence with the Luvua River. Tin is also produced at Bunda and at Kulu, in the north-east of Kikondja (Lake Kissale). One engineer, 3 oversers, and 500 natives are there working. Kabala is their port on the Lualaba.

Tin mining has now just been started at Kalamata, south of the Luvua River, in the south-east of Kiambi. Fifty natives are there at work under one overseer.

The total output of these mines is at present 300 tons a year, but very shortly this production is expected to reach 500 tons.

On account of the ruling low quotations, the Géomine is at present stocking its tin.

Coal Interests.

As to coal, here are the Géomine properties:—

1. The Greinerville Mines, on the Lukuga River, near her exit from the Tanganyika Lake. At these mines, which are on the Great Lakes Railways line connecting the Congo River with Lake Tanganyika, work is shortly to be resumed. Presently, one overseer and 60 natives are there stationed.

2. The Albertville Mines, on the Tanganyika Lake, which will shortly produce 30,000 tons yearly.

3. The Tanganyika Mines, north of the Lukuga, practically opposite (on the map) the Malagarasi mouth. These mines are owned, jointly, with Messrs. Bénard, the Parisian partners of the Géomine.

4. The Luena Mines, south of Bukama. These mines are jointly owned by the Géomine, the Simkat, and Messrs. Bénard. Their working is being started. One engineer, 2 overseers, and 400 natives are at work there. A yearly production of 50,000 tons can be relied upon in the near future. The Luena Mines are to be handed shortly to a branch company, in which the Géomine and the Simkat will have, each, a 35 per cent. interest and Messrs. Bénard but a 30 per cent. interest.

The latest mines are close by the Sankishia coal mines of the Union Minière and of the Katanga Railway Company, and are in the vicinity of the great coal basin discovered by Mr. Ckiandi, who is shortly expected here, back from his prospections on account of the Brussels Syndicat d'Etudes de Gisements et Métallurgies au Congo.

Iron.

The iron deposits are considered to rank among the richest in the world, those of a content of 40, 50 and 60 per cent. not being rare. But in the centre of Africa deposits do not at present admit of exploitation unless by electrical process, the power for which would be obtained from waterfalls.

Gold.

As regards the auriferous deposits, the system of exploitation has been reorganised. It is no longer carried on directly by the State, but by a commercial organisation under State control, at the head of which is an accomplished technical man. The board of directors is composed of specialists. Steps are being taken not only to extract the gold in alluvium but also to trace the veins from which it has become detached. It is thought that the gold mines will produce gold of an annual value of 10 to 12 million francs for the Treasury, after paying all expenses. Certain conventions have been concluded, under a seserve of final ratification, and others have been outlined in connection with the gold mines. This policy is not, however, being pursued. It is not the intention of the Government to open up the mines for private prospectors, it being maintained that to do so would flood the country with adventurers and undesirable colonists.

Diamonds.

In connection with the diamond mines in Kasai, Kwango and Sankuru, M. Franck stated that the output amounts to 200,000 carats, and that it is certain that an equal, if not greater, output, will be obtained for a quarter of a century. The labour population at Tchekapa, where the first diamonds were discovered, and which a few years ago was uninhabited, now totals nearly 10,000 blacks. There exists a series of workshops, in some of which machinery and in others hand labour is employed. The company, La Forminiére, which exploits the Kasai Mines pays, by contract, 50 per cent. of the profits to the State.

A New Corner House Coal Mine.

The Central Mining—or, to be exact, the "T.C.L." —has got hold of what promises to be an important coal mine in the Witbank district. The following details are given in the annual report of the "T.C.L.": "In consequence of promising indications of coal underlying Van Dyks Drift No. 200, Middelburg, prospecting operations were commenced in October, 1920, under the direction and supervision of Mr. A. P. Nellmapius, technical adviser to the Central Mining and Investment Corporation, Ltd. By the end of the year, six boreholes had been drilled, widely spaced over the whole area of the farm (about 7,000 acres). The main coal seam of the Witbank district was intersected in each of these holes at an average depth of 160 feet. Three other seams of workable width were proved to extend over considerable areas of the property. The average width of the main seam, as disclosed in these six holes, was 19 feet 6 inches, and detailed sampling of the coal cores obtained proved this seam to contain an average working width of approximately 14 feet of high-grade bituminous coal with a calorific value between 12·5 lb./lbs. and 13·0 lb./lbs. The other seams above mentioned were found to vary in thickness up to 15 feet, and though not of such high grade as the main seam, the results obtained indicate that they should yield large quantities of coal of good value. The prospecting work as yet accomplished is not sufficient to enable precise figures to be quoted, but Mr. Nellmapius is of opinion that, from the evidence so far available, and reckoning on a conservative basis, the farm is underlain by between 50,000,000 and 100,000,000 tons of high-grade coal and as many tons again of lower grade coal. In view of these highly encouraging results, the board of your company has sanctioned a programme of further drilling at an estimated cost of between £4,500 and £5,000. This work is now in progress, with satisfactory results to date. In addition to confirming and extending our present knowledge of the main coal seam, this further development will supply valuable information as to the exact extent, thickness, and quality of the other seams referred to above."

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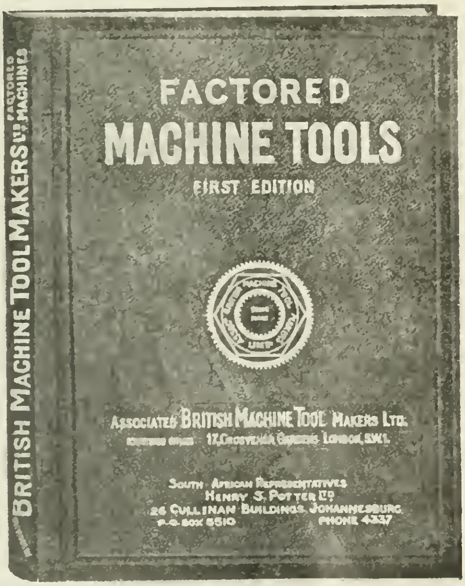
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AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London E.C. 4.

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EDITORIAL.

SIR ABE BAILEY AND DELAGOA BAY!

Sir Abe Bailey marred what was otherwise an excellent speech on the Railway Budget on Monday by a reference to Delagoa Bay that was, to our mind, most unfortunately phrased and wrong in substance and in fact. Lest the telegraphed summary of his speech might have unwittingly misrepresented his remarks, we wired on Wednesday asking Sir Abe if he had been correctly reported as calling the administration of Delagoa Bay "unprogressive," and received from him, by return, a reply to the effect that he had been properly reported and that he had made use of both the words "effete" and "unprogressive" in this connection. Sir Abe also referred us to the full report of his speech as appearing in the "Cape Times"; but unfortunately that report had not reached us up to the time of going to press. We yield to no one in our respect for the public man who is unafraid boldly to express his convictions. But in this case we hold strongly that Sir Abe has been both ill-informed and ill-advised in his condemnation of our Portuguese neighbours. And our reasons are briefly these. When we prepared our first Special Coal Number some time ago we deputed an experienced journalist, who was also a well-known man of affairs in the mining and financial world of South Africa, to investigate and write up on the spot conditions at Delagoa Bay in regard to the coal trade. Our Special Commissioner on that occasion did his work thoroughly and conscientiously; and his considered views remain on record in our pages. Those views, it may be said at once, entirely exonerate our neighbours from the charges of "unprogressiveness" and "slackness" so frequently brought against them by critics who are prejudiced or thoughtless or misinformed. Indeed it is not too much to say that our Commissioner, as the result of his inquiries and investigation, came away from Lourenco Marques strongly of opinion that the Administration of that Province had, as a fact, a genuine grievance against the Union Government on the ground of breach of faith over the Swaziland Railway and its general treatment at the hands of the S.A.R. Administration. In the course of a visit paid by us only the other day to the Port we were satisfied that there remains good ground for this feeling of grievance, and we were impressed by the many evidences of anxiety on the part of our neighbours to cater for the coal trade of the Transvaal. If proof were needed, we may point to the splendid new modern coal-loading installation, fully described and illustrated in our issue of a fortnight ago. That equipment is being built by Rand engineering firms; its cost will run into six figures; and its conception, design and execution will reflect equally favourably on the progressiveness of our neighbours as on the enterprise of our engineering works. Lest Sir Abe Bailey might have missed our article on the subject, we have taken the liberty of sending him a copy of the issue in which it appeared. Nor can anyone who has lately visited Delagoa Bay fail to have been impressed by the general atmosphere of what, for want of a word, we may call "up-to-dateness" that characterises both the railway and the harbour arrangements. At the border the wheezey S.A.R. locomotive is replaced by a new "slick" and smart Baldwin engine that, by contrast, seems to whisk the train at express speed across to the Bay. The docks are well-kept and well-lighted, the wharfage accommodation ample and excellent, and all the arrangements working smoothly and efficiently. Everywhere are signs of extensions and redoubled efforts to cope with the expected growth in the coal trade of the Port. The new High Commissioner, Senhor Brito Comacho, has shown himself by words and deeds an active force for progress and advancement. The railways and harbour services—we do not profess to know the others—are permeated with the same spirit, coupled with an intense loyalty to their Province, which they are all striving to make a success. Sir Abe Bailey, we feel sure, has been badly advised. We owe our Portuguese neighbours active sympathy and the fullest measure of co-operation. By that attitude alone, we are firmly convinced, can we secure the future of the Transvaal coal trade.

HELP FOR THE TOO FAR EAST RAND!

If the capital required to open up the vast virgin areas of the Far East Rand is to be forthcoming, it is now clear that the Mining Leases Act will have to be revised with a view to making its terms more generous and attractive. That is the first and most obvious moral of the valuable and thought-compelling report of the Daggafontein Inquiry Committee. The view is not entirely new, of course; it has been expressed more than once already in this column, and last December we quoted Mr. G. A. Denny as stating, apropos of the very Far East: "The Government must encourage capital by permitting the selection of very large claim areas, in augmentation of mynpachts, on terms that will take fully into account the nature of the risk and the enterprise of those willing to engage in it." We do not know to whom the Committee owed its enlightenment on this question, but it assuredly has taken the matter to heart, and it states its views in very unequivocal terms. The Committee plainly and unanimously reports that the Government should assist the Daggafontein (and by inference other very Far East properties) by a reconsideration of the minimum scale laid down in the Mining Leases Act, as this minimum scale is based on the premises of conditions which no longer exist, especially in respect to the area under consideration.

In elaborating its views the Committee points out that the expenditure at present required to bring a mine to the producing stage has increased by at least 100 per cent. since the fundamental assumptions on which this scale is based were made, and the investor who puts up the money has to use a far greater amount and has a proportionately smaller chance to recoup himself out of dividends, since the profit—if any—has to be divided over the larger capital. The minimum scale does not allow for the change of conditions which has arisen since the promulgation of the Act. That Act provides, however, for a lower scale on condition that such lower scale is made subject to the approval of both Houses of Parliament. The Committee, therefore, is of the opinion that any proposals from the company for a revision of the existing scale of participation, or for the taking up of additional lease areas—on that portion of the farm Daggafontein under freehold to the company—on a lower scale than specified in the First Schedule to the Mining Leases Act, should receive the favourable consideration of the Government. This opinion is strengthened by the fact that Daggafontein Mines, Ltd., and its predecessor, have already spent some £1,359,000 on exploratory work, and that the parties who put up the capital have so far had no remuneration, while the Government, without having made the slightest contribution towards the raising of this large amount, becomes entitled to an interest of 21·809 per cent., under the minimum scale, applied to the whole property.

It is also shown that an additional factor of the greatest importance, which points to the desirability of reconsidering the minimum scale laid down under the Mining Leases Act, is in respect to the payability of this particular area. The percentage of payability in this area, as disclosed by the present development on Daggafontein Mines and other adjacent mines, is undoubtedly less than was assumed as one of the fundamentals in calculating the minimum scale, and this fact, coupled with the necessity for increased capital expenditure and other disabilities, as previously mentioned, renders the development of the remaining Far East Rand areas singularly unattractive to capital for the present and probably for a very long time in the future.

That is the whole matter in a nutshell, and we can only hope that the Government will not dismiss the Committee's frank statement of the case as a mere piece of special pleading. The reform urged by the report is, we honestly believe, an essential condition precedent to the raising of any further funds to develop the Far East Rand.

VIEWS ON THE COAL COMMISSION'S REPORT.

Sufficient time has now elapsed to enable most of those interested to make up their minds in regard to the findings of the Coal Commission. We have, therefore, endeavoured during the week to elicit the views of those best competent to judge the merits of those findings; and with that object in view have addressed a *questionaire* to leading men in the coal mining industry. Some of the replies received are printed here. Others will appear in our next issue. Mr. S. C. Black, the Managing Director of the Transvaal and Delagoa Bay Colliery and of the Douglas Colliery prefers to await the publication of the complete report of the Commission before expressing an opinion. Colonel Gordon Sandilands, Business Manager of the S.A. Coal Estates (Witbank), Ltd., favours us with the following valuable views: "Your Journal of April 30th is before me, and though it necessarily contains only the bare summary of its report, indicates that the work of the Coal Commission has been thorough and exhaustive. Any beneficial results that may accrue therefrom must depend largely upon the method of carrying out the present recommendations, and herein is a good promise of success because the Commission wisely recommend "voluntary" as opposed to "compulsory" pooling. This alone should serve to remove any apprehension which undoubtedly existed in the minds of overseas buyers as to their freedom of action when buying. There are four essentials to a large and steady overseas trade:

1. Coal of a good and consistently uniform value.
2. Co-operation among producers.
3. Rapid and cheap transport to the ship.
4. Rapid and cheap loading facilities.

Given these, success is assured for the markets proper to South Africa lie at its door, in the ports on its own coast line from Suez to Sierra Leone and in others that fringe the Indian and South Atlantic Oceans. The Transvaal is particularly fortunate in the Witbank district where the outstanding feature is uniformity of quality. The new grading scheme should also materially assist other districts to maintain our good reputation. To a very considerable degree the Transvaal colliery owners have led the way in the matter of co-operation. All are convinced of its necessity, and it is hoped that the Commission's recommendations may further extend the principle throughout the Union. It seems that only in the third essential do we run some risk of failure. Our past record in this particular respect has not been marked by much appreciation of the immense potentialities of an overseas coal trade for good to the Union in general. It is to be hoped that the severe lesson recently received by the S.A.R. Administration in the form of the sudden and almost complete cessation of overseas trade may induce it to view the matter of coal rates from the broad viewpoint. Even now rates that hinder rather than encourage coastal trade are to be deprecated. The matter of rates, however, is within our control, and it clearly rests with ourselves to see that no short-sighted raking over of the muck heap of revenue shall distract our vision from the larger crown of reward in the form of a vast overseas market. Since its natural coaling port belongs to a foreign power, the fourth essential does not come under the control of the Transvaal or within the scope of our personal efforts. The Portuguese Government professes to be fully alive to the need for port development and are now engaged upon the installation of a coaling plant extension. It will therefore be our duty to encourage such improvements and to see that the railway's carrying capacity is, at all times, a bit ahead of the port's loading ability."

We understand that these views coincide with those of Mr. Julius Jeppe, the Chairman of the S.A. Coal Estates and other important companies. In this connection it may be put on record that, according to a cable, several South African coal exporters, interviewed by "Lloyd's List" in connection with the recommendations of the Commission, said that the suppliers of better quality of coal did not object to grading, but until further details had been received they were keeping an open mind. As regards pooling, it was surmised that the Union Government would create two grading committees for the Natal and Transvaal collieries respectively, who would permit export under a No. 1 or No. 2 certificate, such grading bearing the Government imprint. This would doubtless satisfy buyers, always provided they know the names of the coal they are getting. The suppliers of the better quality of coal, however, objected to having coal individuality sunk into a general pot, and they desired to avoid a bad name being given to the better coal in foreign markets. Another exporter expressed the opinion that no exception could be taken to pooling if it was not compulsory and the collieries were enabled to continue to help one another purely voluntarily. A further selection from the views of representatives of the coal industry will appear in our next issue.

Nigel Finances.

The total revenue of the Nigel Gold Mining Company for 1920 was £15,209, plus £44,174 brought in, making £59,383. Native wages, maintenance of plant, etc., absorbed £1,957; claim licences, £2,718; fire insurance, £451; mynpacht dues, £387; general expenses at head office, London office, etc., £3,290; sundries, £530; exploratory development charges, £8,523, leaving an appropriated balance to credit of £41,524.

THE BUSY MAN'S PAGE.

AN ABSTRACT OF CURRENT INFORMATION FOR MINING MEN, ENGINEERS AND INVESTORS.

FORTHCOMING MEETINGS.

A Company Diary.

Brakpan Mines.—Eighteenth ordinary general; Corner House; May 17.

Springs Mines.—Twellth ordinary general; Corner House; May 17.

West Springs.—Fourth ordinary general; Corner House; May 17.

New Era.—Nineteenth ordinary general; Corner House; May 17.

Modder Deep.—Twentieth ordinary general; Consolidated Buildings; May 18.

S.A. Land and Exploration Co., Ltd.—Eighteenth ordinary general; 38 Meischke's Buildings; May 18, 12 noon.

Knight Central.—Corner House; May 20.

Rose Deep.—Twenty-fifth ordinary general; May 19.

Durban Roodepoort Deep.—Twenty-fourth ordinary general; May 19.

East Rand Proprietary Mines.—Twenty-fifth ordinary general; May 20.

Village Deep.—Twenty-first ordinary general; May 25.

Geldenhuis Deep.—Twenty-sixth ordinary general; May 25.

Crown Mines.—Twenty-fifth ordinary general; May 26.

Modderfontein B.—Twelfth ordinary general; May 26.

City Deep.—Twentieth ordinary general; May 27.

Robinson.—Thirty-first ordinary general; May 27.

New Primrose.—Annual ordinary general; May 26.

New Unified Main Reef.—Twenty-third ordinary general; May 26.

Langlaagte Estate.—Thirtieth ordinary general; May 26.

Randfontein Central.—Fourteenth ordinary general; May 26.

Randfontein Estates.—Twenty-eighth ordinary general; May 26.

Consolidated Langlaagte.—Eighteenth ordinary general meeting; May 27.

Witwatersrand.—Annual general meeting; May 27.

New State Areas.—Fourth ordinary general meeting, May 27.

Van Ryn Deep.—Sixteenth ordinary general meeting, May 27.

Government Gold Mining Areas.—Eleventh ordinary general meeting; May 27.

Geduld Proprietary.—Twentieth ordinary general; Consolidated Buildings;

New Kleinfontein Co., Ltd.—25th ordinary general meeting, 27th May.

Bantjes.—Twenty-fourth ordinary general; Corner House; May 27.

Union Corporation, Ltd.—Ordinary general meeting; 94 Main Street; June 3, 11 a.m.

Transvaal Consolidated Land and Exploration Co.—26th ordinary general; Corner House; June 15.

Rand Mines.—Corner House; June 2

What to Read in the Technical Press.

A DIGEST OF CURRENT LITERATURE.

Mining.

Valuing Partly Exhausted Mines.—*Mining and Scientific Press*, April 9, p. 489.

Recovering Gold from Black Sand.—*Mining and Scientific Press*, April 9, p. 504.

Pit Sinking.—*Iron and Coal Trades Review*, April 15, p. 529.

Theory and Practice on Drill Sharpening.—*Iron and Coal Trades Review*, April 15, p. 531.

Iron and Steel.

The Failure of Metals.—*Iron and Coal Trades Review*, April 15, p. 523.

The German Iron and Steel Industries.—*Iron and Coal Trades Review*, April 15, p. 533.

Coal.

The Analysis of Coal.—*Colliery Guardian*, April 15, p. 1094.

New Method of Coal Seam Correlation.—*Colliery Guardian*, April 15, p. 1102.

Engineering.

Recent Developments in Turbine Practice.—*Electrical Review*, April 15, p. 472.

A Reinforced Concrete Limestone Bunker.—*Iron and Coal Trades Review*, April 15, p. 527.

Steel Works Cranes.—*Iron and Coal Trades Review*, April 15, p. 535.

Economies of Hydro Electric Development.—*The Engineer*, April 15, p. 395.

Electrification of the Italian Railways.—*The Engineer*, April 15, p. 400.

Sir William Hoy on Coal Traffic.

In his latest "Bulletin," Sir Wm. Hoy writes:—"Shipment coal showed a falling off of nearly 100,000 tons in February, though the figures were well above those for the corresponding month of the previous year. The March figures were also disappointing, and in order to meet the highly competitive conditions which had developed, further reductions in shipment and rates were made on 6th and 11th April, to which reference is made in this 'Bulletin.' As a result of the recent depressed condition of the trade, large quantities of coal accumulated at the ports. On the 27th April there were 54,000 tons on hand at Durban and 20,000 tons on hand at Delagoa Bay. The coal trade is again improving and there are indications of a considerably increased demand, partly as a result of the coal situation in Great Britain. Though daily figures are not an infallible guide, the following shipments indicate the tendency: 7,309 tons were shipped at Durban on 23rd April, compared with 1,425 on 29th March, while at Delagoa Bay 3,432 tons were shipped on 25th April, compared with 1,459 tons on 29th March. The principal destination of exports are Colombo and the East, a small tonnage being despatched to Red Sea ports. The coaling appliances at Delagoa Bay broke down on 23rd March and were out of commission until 12th April. They have unfortunately again broken down just at a time when there is a renewed demand for coal and when steamers are waiting to load. I referred in last month's 'Bulletin' to the necessity for the more prompt release of trucks. On April 21st the equivalent of 1,103 short trucks had been on hand under load at Durban Point and Wests for three days and over, the majority of them containing shipment coal. This represents truck detentions for three days and over at three stations only in the Union, and affords some indication of the truckage held up day by day for storage purposes and not available to the Administration for the purpose for which they are intended, i.e., the movement of traffic."

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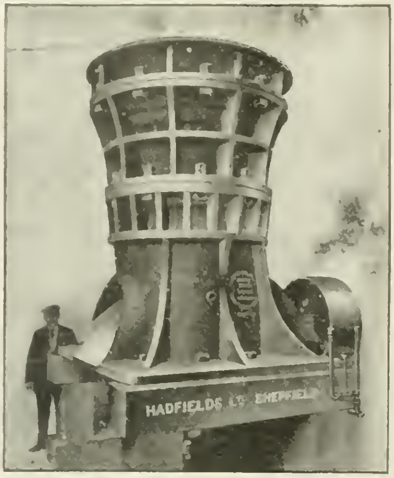

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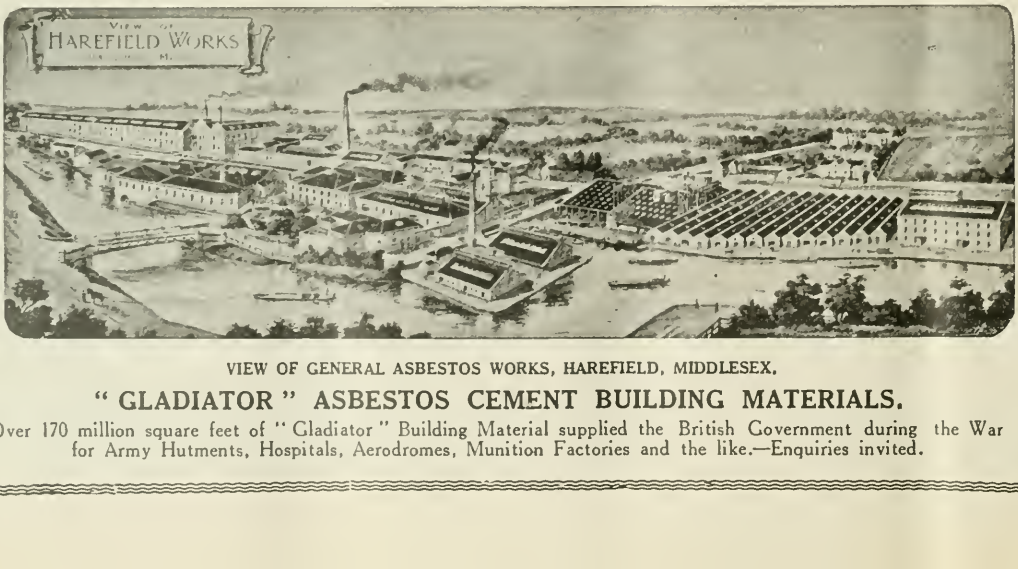

VIEW OF GENERAL ASBESTOS WORKS, HAREFIELD, MIDDLESEX.

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ENGINEERING SECTION.

The Facts About Pretoria Iron.

We are glad to print the following, setting forth the exact facts about the present position of the Pretoria iron industry.

Within the last day or two it has been rumoured in town that the Pretoria Ironworks was closing down its plant. Mr. Delfos, the managing director, however, informs us ("Pretoria News") that this is only part of the big development scheme that is now being embarked upon. It may be recalled that a small experimental plant was erected some time ago in order to prove that the iron ores and fuels, as also the dolomite and limestone here, are suitable materials for the production of pig iron. This was most successfully demonstrated. It has also been shown that from these materials a pig iron for foundry purposes or for steel making at will can be produced. The furnace, however, was kept going until the expert, Mr. Ernest Bury, who has been appointed by the Corporation as its Consulting Engineer, had an opportunity to visit South Africa and inspect the plant whilst working. This visit has now taken place and there is, therefore, no necessity to go on working this plant.

Incidentally, experiments have given work to some thirty white men and a number of natives, and, not only has a quantity of iron been produced and marketed but stocks have been accumulated sufficient to keep the local market supplied, and also the requirements of the works itself, for quite six months. Pretoria iron will be used on the new plant to a great extent. Some of the employees have already been absorbed in other employment.

In a general conversation with Mr. Delfos, we gathered that the whole attention of the management is now being concentrated on the plant proper.

Plants and drawings are now being made; it is not possible to do anything on the site of the new works before they have been completed.

Asked if it is the intention of the Corporation to manufacture much of the plant in South Africa, Mr. Delfos said that this had always been the intention, and the Consulting Engineer was of the opinion that great savings would be affected by doing so. It was sound principle that whatever could be made in this country should be manufactured by the engineering firms who had works here, provided the terms were favourable. It was intended to make all the castings in South Africa and also all plate work and constructional iron work in so far as it was possible to do so. Naturally, machinery such as blowing engines, steam turbines, electrical plant, pumps, etc., would have to be imported. Castings such as plates for platforms, bunkers, etc., would be made in the Corporation's own foundry.

"Can you give me any information about Mr. Bury?" was asked.

Mr. Bury, replied Mr. Delfos, has been the general works manager of the Skinningrove Iron Works, a concern producing about 150,000 tons of steel per annum. These works are probably run on the most scientific lines in Great Britain, and consequently their cost of production is amongst the lowest in Great Britain. It was greatly due to Mr. Bury's ability that these results were obtained. About the middle of last year Mr. Bury resigned his position as general works manager, and was made a director of the Skinningrove Iron Company, and at the same time appointed as their consultant. He is also the founder of the Teme By-products Company, of which he is a director and also the consulting engineer. He further holds the position of consulting engineer to Messrs. Pease and Partners, and to the new Indian Iron and Steel Company, the Carnation Works. In short, he is a very able man, and my Corporation has been very fortunate in securing his services.

"What is Mr. Bury's opinion about the prospects of the iron and steel industry in Pretoria?"

Mr. Bury was very much impressed with the tremendous possibilities of this industry. He had been investigating the geological, metallurgical, and economic reports on our proposition about one year in England, and he had already formed a very high opinion of the possibilities. After inspecting the deposits, etc., locally, he came to the conclusion that the prospects are still very much better than he had concluded from the reports, and he is of the opinion that we have got a magnificent proposition, and that we shall be able to produce iron and steel at a considerably lower figure here than can be done in Great Britain, even after matters have settled down to normal again. Mr. Bury has written a short article on his impressions which will be published shortly. A report covering the whole position also from a more technical point of view will be published shortly after his arrival in England.

Finally, said Mr. Delfos, I may say it is Mr. Bury's opinion that the site and all conditions at Pretoria are ideal for the establishment of the industry in this locality. He stated that our proposition was very much like the Indian proposition he has in hand, at least in so far as the raw materials are concerned. The position in regard to labour, water, climate and surroundings is very much better here.

South African Railways and Harbours.

Electrification of Capetown—Simonstown and Durban—Pietermaritzburg Lines.

The time of acceptance of all tenders for the abovementioned services has been extended to the 5th July, 1921.

W. W. HOY, General Manager.

Johannesburg, 7th May, 1921.

DRAUGHTSMAN.

Structural Draughtsman with seven years' experience seeks situation. Write A.H., care of "S.A. Mining and Engineering Journal," P.O. Box 963, Johannesburg.

Railway Development in the Katanga.

Railway development in Katanga has also long been under consideration; construction to the extent of an estimate of 65 million francs was decided upon in 1919. Before the war the cost of construction of a kilometre of railroad in Katanga was about 100,000 francs; to-day it is 325,000 francs. Rails delivered on the line now cost 1,700 francs a ton instead of 400 francs as formerly. Monsieur Renkin, formerly Minister of the Colonies, declared in this connection that railroads should be established to insure the economic autonomy of Katanga, which at present draws all its supplies of coal and wood from Rhodesia.

The general programme of proposed railway development is as follows:—

1. Partial reconstruction of the railway from Matadi to Leopoldville, the cost of which will probably amount to 100,000,000 frs.
2. Completion of the Katanga railway towards the north and from Bukama to a navigable portion of the Lualaba; cost 30,000,000 frs.
3. Construction of the first Belgian portion of the Benguela railway (Tshilongo-Ruwe, the B.C.K. concession), 20,000,000 francs; and subsequent continuation, in proportion to the construction of the corresponding line on Portuguese territory.
4. Increase of railway material on the Great Lakes Railway, etc., 25,000,000 francs.
5. Improvement of the Mayumbé railway and equipment, and also of the port of Boma, 8,000,000 francs.

No less vital and urgent for the development of the colony are the following:—

6. Communication between the industrial centres of Katanga, the populous and fertile districts of Sankuru and Kasai and the Lower Congo ports (1,850 kilom.). The construction of the first section from the Lualaba to Kasai may be estimated at 215 million francs.
7. Construction of a railway line joining the river Congo (between Stanleyville and Bumba) with the gold mine district of Kilo and Moto. The Compagnie des Grands Lacs has been accorded a concession for a railway from Stanleyville to Lake Albert, and there is also a scheme for a line connecting Boma-Buta-Nepoko-Moto-Kilo, with a branch line towards Bondo. The construction of a first section is estimated at about 125,000,000 francs.
8. Construction of the section Kabalo-Kongolo appears desirable in order to avoid a difficult reach of the river and to connect Kindu directly with Albertville by a railroad, 20,000,000 francs.

Other Developments.

These proposals would in themselves be incomplete if the ports of Matadi and Kinshasa and the navigable portions of the river and tributaries were not improved and more amply supplied with tonnage, and finally if an incidental policy in regard to roads were not conceived and materialised.

Provision must therefore be made for:—

9. Extension of buoying, dredging material, port installations and improvement of navigable waterways, 30 million francs.
10. Increase in the number of vessels belonging to the Société Nationale des Transports Fluviaux and extension of the service on the smaller rivers, 15 million francs.
11. Construction of a network of roads (State and native roads), and provision of mechanical means of transport, etc. An average of 10 million francs per province totalling 40 million francs.
12. Public and sanitary works in urban centres and native quarters, roads, water supply, lighting, etc., 30 million francs.

The whole totals about 660 million francs. This estimate, which is naturally only approximative owing to present market conditions, will need to be increased by the amounts necessary for the construction of subsequent sections of the railway towards Benguela, in the Lower Congo, from Kasai to Stanleypool and in the North-East.

Several years will be required for the execution of so extensive a programme, and it seems probable that it will be carried out only by small instalments.

Not only is there need for an increase of inland means of transport both by rail and river, but also of ocean services. Some measures have already been taken for this purpose, and the port of Matadi (with the roadstead of Ango-Ango) is capable of being developed to permit trade of a million tons of goods a year, both inwards and outwards. The Compagnie Belge maritime du Congo, which, on the termination of hostilities, no longer possessed more than two passenger vessels, is now launching a third, and a fourth will be launched in the summer. This company also possess four cargo steamers.—*Board of Trade Journal.*

S.A. RAILWAYS AND HARBOURS

New Work Authorised.

Germiston.—Provision of a Holman Compressor for East London.—Purchase of 13 trailers and 1 Ford delivery van for the Cartage Department.

Vryheid East.—Purchase machinery for the running shed.

Germiston.—Provision of a Holman Compressor for Loco Department.

Zeerust.—Remodel yard and provide engine shed, electric lighting, signalling and improved water supply.

Germiston.—Provide an electrical sub-station.

Arnot.—Provide an additional crossing loop and signalling.

Witbank.—Provide new siding for storage of empties at east end of yard.

Swakopmund.—Provide new light.

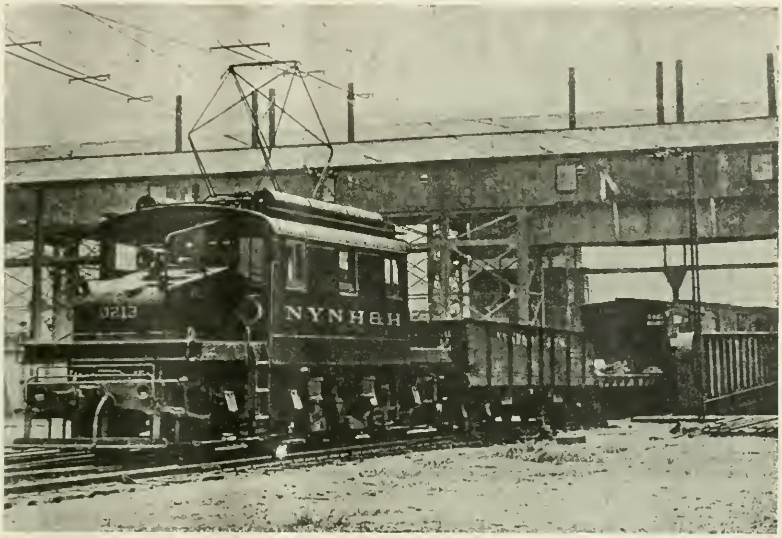
Klerksdorp.—Provide 12 houses for staff.

PRETORIA SILVER LEAD QUARTERLY REPORT.

Buildings: The roof is now on, and the manager's house should be ready in a month's time. Shaft equipment: The headgear is up and being equipped, and the winding engine is under steam. The compressor is under erection and will be ready before the air is required. Steam plant: The boilers have been passed, and the bricking is completed. One boiler is under steam, and the other two are being dried out in readiness. Flues and stack have also been erected and completed, together with the necessary water service tanks and boiler feed plant. Workshops: All the machine tools, including saw bench, are now in commission, and all ordinary shop and repair work can be done on the spot without delay. A smithy has been erected and fitted up. Main shaft No. 1: The shaft equipment being practically completed, a start at shaft sinking was made at the end of the month, and the bottom is now 10 feet below the collar set. The necessary sinking pumps have been secured, and everything is in readiness for very quick sinking, though rapid work will not be possible in penetrating the heavy water zone at from 50 to 70 feet. Owing to the soft formation, heavy and close timbering will be required for the first 80 feet. Seeing that the heavier plant only arrived on the ground towards the end of February and that the heavy rains of March caused many delays, I consider very good progress has been made in the erection of plant and equipment, and now look for rapid progress in shaft sinking and development.

S.A. Railway Electrification: Minister's Explanation

The suggestion made in Parliament a week or two ago that the preliminary work in connection with the electrification of the line from Capetown to Simon's Town and from Durban to Maritzburg should be suspended until "a more convenient season" did not meet with official support. The idea emanated from a member of the Upper House (Mr. Ehrlich) who suggested that the money earmarked for the purpose, about five millions sterling, should be devoted to the construction of new railways, thus opening up districts which are at present without means of railway communication, and, incidentally providing work for many of the unemployed.



An Example of Successful Railway Electrification in the U.S.A.

The Minister of Railways, having stated that tenders for the preliminary work had already been called for—the amount sanctioned being £4,385,400—went on to give the reasons why it had been decided not to suspend these preliminaries. "Electric traction is being introduced in South Africa," said Mr. Jagger, "for the same reason that it is being introduced in other parts of the world, namely, to effect economy in working, and help to counteract the large and universal increase in operating costs. Traffic has fallen off somewhat on certain lines, and the outlook at the moment is not so reassuring as when the electrification scheme was sanctioned, but while reasonable prudence must be observed in capital expenditure, it would be unwise to provide for the future on the basis of present-day trade and traffic conditions or the present-day outlook, which are abnormal and transitory. It will take some time to carry out these electrification works, and if the lines proposed to be electrified are to be equipped to handle efficiently and economically the traffic that should normally be available by the time the works are completed, the scheme will have to be proceeded with or large sums will have to be spent on other improvements which will not produce the same economical results. Market conditions or the financial position may, of course, affect the progress of the work, but these are aspects which will be carefully considered. The desirability of constructing additional developing railways for the opening up of the country districts is appreciated, and is likely to be hastened rather than retarded by the introduction of modern and economical methods of working. To build a large mileage of branch lines at the expense of modern methods would only mean increasing the loss on working without introducing any counter-balancing economies in the operation of existing lines."

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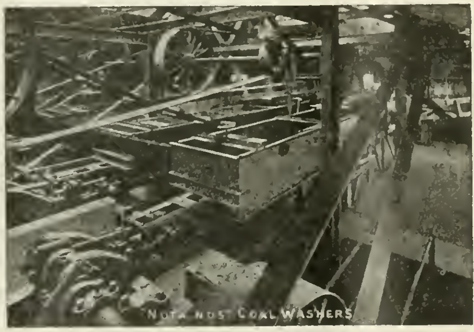

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The "Mining Journal's" Essay Competition.

The enduring improvement which our mines require can only be obtained through the media of better efficiency and lower working costs and with a view to eliciting constructive views on these supremely vital subjects the *South African Mining and Engineering Journal* offers a prize of £25 for the best essay on the subject of "How to Improve Efficiency and Lower Working Costs in and on the Mines of the Witwatersrand."

Criticism should be constructive rather than destructive, but the assurance is given that no competitor will in any way be prejudiced in his employment by the submission of criticism of existing means or methods.

Essays containing libellous or malicious statements against any particular individual or individuals will not be considered.

TERMS OF THE COMPETITION.

The conditions of this competition are as under:

1. Essays must not exceed 2,500 words in length, and where new or suggested devices form an essential portion of the Essay, the contribution should be accompanied by diagrams clearly exhibiting the nature and functions of such device or devices.
2. Essays should be typewritten or written in easily legible handwriting on one side of the paper (preferably of foolscap size) only.
3. Each essay must state the full name and address of the author and if the author is an employee of a Mining Company operating in South Africa or has been an employee of such a company, his occupation and position should be stated.
4. Essays and diagrams (if any) must be addressed to the Editor, the *S.A. Mining and Engineering Journal*, Box 963, Johannesburg, and be marked "Competition" in the top left-hand corner of the containing envelope.
5. The competition closes on July 1st, 1921.
6. In the event of the Committee of Adjudication deciding that no essay submitted merits the award of £25, the Committee will have power to withhold the award of such a prize and to give in lieu thereof an amount which they consider proportionate to the value of the best article or articles submitted.
7. It shall be at the option of the Editor of the *S.A. Mining and Engineering Journal* to publish any essay or any portion of any essay submitted and to pay for such essay or portion thereof at the rate of £2 2s. per page according to the measure of pages in the *S.A. Mining and Engineering Journal*.
8. No correspondence can be entered into regarding this competition, and the Editor of the *S.A. Mining and Engineering Journal* will not hold himself responsible for the safe return of any manuscript submitted, but where a stamped and addressed envelope is forwarded with each contribution the Editor will, after adjudication, endeavour to return unsuccessful contributions
9. A competitor may submit more than one contribution.
10. It is an express condition accepted by and binding upon all competitors that the decision of the Committee of Adjudication as constituted above or of any alternative adjudicators is final and absolute. Submission of manuscript will infer a full understanding of the acquiescence of the competitor in this and other conditions of the competition.
11. Essays may be written in either of the official languages.

Points for Competitors.

There are one or two matters in connection with this essay competition which we would like to bring to the notice of competitors.

In the first place it should be made clear that a good idea will not be debarred from winning the prize offered because the contribution fails from a literary point of view. Neither will brevity be a handicap. On the contrary we shall welcome briefly expressed ideas and suggestions provided that they contain some useful and new idea or some better application of an idea or device which is not new or novel

Metal Prices.

On the London Metal Exchange on Monday standard copper closed at £72 7s. 6d. cash and £71 7s. 6d. forward; electrolytic copper, £73 cash and £74 forward; Straits tin, £176 2s. 6d. cash and £176 5s. forward; English lead, £24 cash and £24 forward; bar silver, 35½d.; fine gold, 103s. 3d.

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IMPORTANT.

Our attention has been drawn to Mr. C. G. Elliott's remarks anent THERMIT WELDING, on page 282 of the "S.A. Mining & Engineering Journal," dated November 20, 1920,

"PLATES *vs.* BAR FRAMES."

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LARGE STOCKS ON HAND.

The Week in the Sharemarket.

MANY FACTORS AT WORK—GOLD STOCKS STEADY—COALS IMPROVE—TRANSVAAL SILVERS BETTER.

The bright feature of the week has been the unconditional acceptance by Germany of the Allies' terms. Although this merely confirms the view, widely held, that Germany all along was merely bluffing, it has been welcomed with a sigh of relief. The business field will now be widened by the demands of Germany for raw materials, and it may be that the sale of many of our products, such as wool and base metals will be soon favourably influenced thereby. There is also a ray of sunlight from Siberia, where the Russians are said to be about to restore the mines to their lawful owners, the shareholders. At least one of our prominent Rand brokers will rejoice at this, as he has always believed that Siberians would return to favour. The re-awakened hopes that recruiting of labour from north of latitude 22 deg. south would be permitted has also been an encouraging feature of the week. The official Labour people are, of course, opposing the idea, and Mr. Malan has promised that nothing will be done until Parliament has debated the matter. Gradually under the inexorable pressure of facts, the Union Parliament is showing a little more understanding of the needs of the mining industry. Though the dividend tax is increased 50 per cent. the Provincial Council is prevented from raiding the mines any more; and the reports of the Low Grade Mines Commission and Unemployment Commission are beginning to sink in. The bad feature of the week is, of course, the disquieting news of the coal crisis on Thursday. We can only hope that by the time these lines appear in print things will have taken a turn for the better, and that the great good sense of the British working man will again be vindicated. The South African coal industry, of course, cannot help reaping an advantage from the misfortunes of the British coal trade, and our colliery shares have all been firmer during the week. The London papers all agree that our coal industry must benefit, and already we hear of big orders for coal cabled to Durban and Delagoa Bay. Let us hope both ports (and railways) will rise to the occasion. In gold stocks the market during the week has been quietly firm, Modder Easts even rising a little. Apart from gold shares, Transvaal Silvers, on the news being published that the bulk of the new issue had been taken up, rose sharply, and are in demand at higher prices. Diamonds and tin shares are quiet, but the general outlook for base metals is said to be improving. This should benefit our lead, tin and copper companies. Quotations for the week were as follow:

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thurs. 12th.
Anglo-Am. Corp.	20 6*	20 3*	20 6*	20 3*	20 0*	20 3
Apex Mines	6 9*	6 9*	6 10*	7 0*	7 0*	7 0*
Bantjes Cons.	5 3	5 0*	5 3	5 1*	5 3	5 3*
Blaauwbosch Dmds.			13 0†	—	—	—
Brakpan Mines	56 0b	53 9*	53 6*	53 6*	53 0*	53 0*
Breyten Colls.	5 0	5 0*	5 0*	5 0*	5 0*	5 0*
Brick and Potteries		4 0*	4 0*	4 0*	—	4 0*
Bushveld Tins	0 6*	0 6*	0 6*	0 7	0 6	0 7*
Cassel Coals	30 0*	30 0*	30 0*	30 0*		—
Cinderella Cons.	—	—	2 0*	—	—	2 0*
City and Subs.	2 0*		—	—	—	—
City Deeps	42 6*	42 6*	42 6*	42 6*	44 0*	44 0*
Clydesdale Colls.	25 6*	25 6*	25 6*	25 6*	—	25 6*
Con. Investments	—	23 0*	—	—	—	—
Con. Main Reefs	10 6*	10 7½	10 6*	10 7*	10 10½	10 9*
Coronation Freeholds	1 0*	1 3†	0 9*	1 2†		0 9*
Do. Freeholds	4 0*	4 0*	—	—	4 0*	—
Crown Diamonds	2 10*	2 9*	2 9*	2 9*	2 9*	2 9*
Crown Mines	39 0*	—	41 0†	39 0	40 0*	—
Daggafontein Mines	3 6*	3 6	3 6	3 6*	3 6*	3 6*
Durban Rood. Dps.	—	—	—	3 6*	3 6*	—
E.R. Coals	2 0*	—	2 0*	—	2 1*	2 0*
E.R. Deeps	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
E.R. Proprietary	5 0	4 9*	—	—	4 9*	4 9*
E.R. Debentures	—	—	—	£70†	—	£70†
Eastern Golds	—	0 6*	0 6*	0 6*	0 6*	0 6*
Frank Smith Dmds.	3 2	3 3	3 2*	3 2*	3 2*	3 2*
Geduld Props.	47 6*	47 3*	—	47 3*	47 6	47 9*
Glencoe Colls.	12 0*	12 0*	12 0*	12 3	12 6*	13 3
Glynn's Lydenburgs	9 0*	9 0*	9 6	—	—	—
Government Areas	79 0*	78 6*	79 0	79 0*	79 6	80 0
Jupiters	3 7*	3 9*	3 6*	3 7*	3 9*	3 10*
Knight Centrals	4 1	4 0*	4 0*	4 0*	4 2†	3 10*
Knights Deeps	15 3*	15 0*	—	15 0*	15 0*	15 0*
Lace Props.	7 9	7 6*	—	7 6*	7 6*	7 6*
Leeuwpoort Tins	9 3*	9 0	9 3*	9 6	9 6*	9 6*
Luipaardsvlei Est.	—	—		1 6†	1 6†	—
Lydenburg Farms	—	4 6*	4 9*	4 9*	4 9*	4 9*
Meyer and Charltons	80 0*	—		—	80 0	—
Modder B.'s	24 9	24 6	24 6	24 9*	24 9*	24 9
Modder Deeps	44 6	44 0*	44 6	44 9	45 0	45 0
Modder Easts	11 0	10 9*	10 7*	10 7½	10 7*	11 0*
Do. Opts. (4 yrs.)	0 3†	0 3†		0 3†	0 3†	—
Con. Diamonds	12 0*	12 0	—	12 0*	12 0	12 0
Hume Pipes	19 6†	17 6*	19 0†	17 6*	18 0*	19 0†
Natal Nav. Colls.	31 9*	32 6†	—	31 6*	33 0	33 6*
New Era Cons.	6 6*	6 6*	6 6*	6 6*	6 6*	7 0
New Geduld Deeps	1 3*		1 3*	1 3*	1 3*	1 3*
New Kleinfonteins	5 9	5 6*	5 6*	5 6*	5 9*	5 9*
New Modders	65 6*	65 0	65 3*	66 6a	66 0	66 0
New State Areas	23 6	22 9*	22 6*	22 6*	23 0*	23 0*
Nourse Mines	7 0	—	—	—	6 6*	7 0*
Premier Cements	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Pretoria Cements	50 7½	49 0	49 6	49 0*	49 0*	49 3*
Princess Estates	1 2†	—	1 1	1 0*	1 2†	1 0*
Rand Nucleus	1 0	—	1 2†	—	1 0*	—
Randftn. Centrals	—		9 0*	—	—	9 0*
Randfontein Est.	14 3	13 6*	14 0	13 9*	14 0*	14 0*
Roberts Victors	5 0*		5 0*	5 0*		—
Rooibergs	4 9	4 0*	4 3*	4 3*	4 1*	4 2*
Rouxvilles	2 0*	2 1*	2 3	2 1*	2 1*	2 6
Ryan Nigels	3 6*	3 6*	3 6*	3 6*	3 3*	—
S.A. Alkali	16 0*	17 0	19 3	19 0*	19 3	19 3
Do. Options	2 6*	2 0*	3 3*	5 0*	—	—
S.A. Lands	4 4	4 3	4 3	4 2*	4 3*	4 3*
S.A. Townships	9 0*	9 0*	9 0*	—	9 6*	9 6*
South Van Ryns	3 6*	3 0*	3 0*	—	3 3*	3 0*
Springs Mines	35 0	34 9	—	34 0	34 6	34 3
Sub Nigels	13 3	12 9	12 6*	12 6*	12 9	13 0†
Swaziland Tins			—	—	5 6*	6 0*
Transvaal Lands	18 0	17 9*	—	17 9*	18 0b	18 0*
Trans. G.M. Est.	7 6*	—		7 6*	7 6*	7 6*
Transvaal Silvers	21 6	21 3	21 3	21 6	25 0	25 6
Tweefontein Colls.	—	—	—	—	—	16 6*
Van Dyks	1 3*	1 6†	—	—	—	—
Van Ryn Deeps	72 0	72 0*	72 6*	72 6*	73 6	73 3
Village Deeps		7 0*	—			7 0*
West Springs	12 6*	12 0*	12 6*	12 3*	12 9	12 6*
Do. Options	—	0 2†	—	—	—	0 9†
Western Rand Est.	3 0*	3 0*		3 6	3 6†	3 3*
Witbank Colls.	44 0*	45 0	44 0*	44 0*	44 0*	
Wit. Deeps	6 9*	6 9*	6 9*	6 9*	6 9*	6 9*
Wolhuters	3 0*	3 0*	3 0	3 1*	3 9*	3 0*
Zaaiplaats Tins	3 9	—	3 6	3 3	—	3 6*
Union 5 per cent.	£97*	£97	£97	£97	£97*	£97*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Messina.

The plight of the Messina Mine was discussed in the Provincial Council this week, doubtless as a preliminary to its being debated in the Union Assembly. The following motion was carried unanimously by all parties in the Council "That this Council has noted with regret the proposed closing of the Messina Copper Mine as a result of the fall in the price of copper, increased wages, and the responsibility by the company of the railway guarantee of £36,000 to the Union Government. The Council realises the seriousness of the loss which will be sustained by the northern part of the Transvaal due to such closing, and therefore urgently requests the Union Government, by respectful address, to inquire into the circumstances of the mine and to give, at once, such relief in connection with the £36,000 guarantee or in such other way as will enable the company to continue working."

The mover said that the direct result of the closing of the mine would be greatly to increase unemployment. The question was of great importance not only to the mine but to Zoutpansberg as a whole. The farmers were greatly affected, as numbers of them derived their living from the activities of the mine.

Letters to the Editor.

CONGO DIAMONDS.

To the Editor, *S.A. Mining and Engineering Journal.*

Dear Sir,—I think that most of us have read the article in your issue of April 30th, re the Congo Diamond Fields, with absorbing interest. I think that the trouble with us in this instance is, that we have got so used to Yankee big talk and bluff, that anything outside America, in which American capital has a controlling interest, is sceptically treated by us.

Eight thousand square miles of alluvial ground sounds very alarming, no doubt, and a quarter of a million carat output per annum is a very serious factor at the present juncture. If one, however, thinks over the matter and takes the massed annual output of the alluvial diggings in the Union and also glances at the map and notes the area roughly covered by these alluvial diggings, the Congo Diamond Fields seem to have a long way to travel before they can claim either the same output, or the same area of alluvial that we have.

If one takes the map of the Union and draws a line from Pretoria to Mahura Muthle, and then on to Upington, then up to Aliwal North and back to Pretoria, one has an area far in excess of the 8,000 square miles of the Congo Fields, and an area too that with far more justice could be called a diamondiferous area.

Some information as to the average size of the diamonds found in these Congo Fields and also as to their average value, as compared with ours, would be of great interest.

Yours truly,

W. B COLLINS.

[Perhaps the best reply to this is contained in the letter of the Brussels correspondent of the "African World," who wrote in mail week from the Belgian capital, as follows:—"Reports are circulating, according to which the Forminière is selling Kassai diamonds under the prices of the London Syndicate. On making inquiries at the company's headquarters here, these reports were flatly contradicted. The Forminière is, of course, reducing its sales of diamonds to the trade, and only those urgently requiring them can obtain diamonds, for which they pay at prices fully sympathetic with those quoted by the London Syndicate. Furthermore, as far back as in May, 1920, the Forminière instructions were not to increase the output, but only to improve the means of production. These instructions are still more stringently enforced this year. Thus the output for 1921 will be considerably lower than that of last year. I availed myself of a call at the Forminière to inquire about the quality of the Kassai diamonds, and heard that, as far as colour is concerned, they are considered to be finer than the diamonds from the Cape. Their colour is viewed as better, more transparent, and more brilliant. The chief kinds are of the "blue white" descriptions. We have the whole scale, from the "blue white" down to the common diamond, which is pulverised for the cutting. The diamonds of good quality are remarkable for their fine and pure colours. From what I heard, the whole of the concession of this company, 100,000 hectares, is considered to contain diamondiferous deposits. The proposition is as good as the Minière Bécéka, which is considered equally good. We shall, however, be still better informed in a year from now."—Editor, S.A.M. & E.J.]

I. of M. & M. War Memorial.

Mr. Peter N. Nissen, whose reputation as a mining engineer and as the inventor of the Nissen stamp is well known, and who achieved distinction in the Great War as a lieutenant-colonel of the Royal Engineers and the originator of the "Nissen hut" for troops, has designed and modeled a series of figures that are to form the group of statuary of the war memorial of the Institution of Mining and Metallurgy to those of its members who sacrificed themselves for the Great Cause.

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BROS
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"WESTGARTH PATENT CORE"
WIRE ROPE.

It provides greater safety than can be secured by the regulations attached to the New Mines Act, because it is impossible for any acid in the hemp core to corrode the wires in the strands. A rope with an ordinary core frequently appears to be in good condition on the exterior, whilst its interior is in a dangerous condition.

As the strands cannot crush each other there is no internal friction, and in consequence, broken wires are reduced to the minimum.

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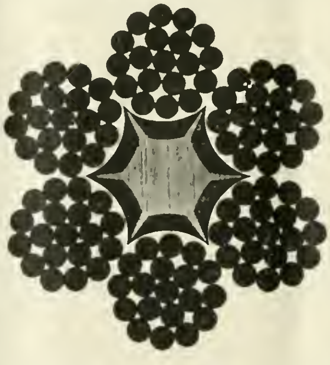

At a normal load there is less elongation and consequently less twist in the shaft than is usual with ropes constructed with ordinary cores.

Prevents disintegration of Hemp Core.

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PATENT CORE"
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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material & Engineering Trades

GENERAL POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—AMERICAN TRADE CONDITIONS AND PROSPECTS—ELECTRICAL GOODS—OIL—EFFECTS OF THE COAL STRIKE—BRITISH RAILWAYS—SHIPPING STRIKES— RAILWAYS AND HARBOURS REPORT FOR 1920 AND THE WEEK ENDED APRIL 30—FINANCIAL—APRIL GOLD OUTPUT AND NATIVE LABOUR.

General Position.

Merchants this week have been in a halting and indecisive mood, and business has been confined within very narrow limits. On the Commercial Exchange there has been further selling at prices below cost by some speculators, but on the whole, transactions have been of a meagre character. It is recognised that we are on the eve of big decisions. Because of the decision of the Transport Workers' Federation and the Railwaymen's Union prohibiting the handling by workers of foreign coal arriving at British ports, there is diminished hope as regards the coal strike. The disastrous effects on industry and conditions generally of the protracted dispute seem now to have gripped the minds of both workers and public, and it is evident that extraordinary steps are about to be taken to put an end to such an unsatisfactory state of affairs. Here it is thought not improbable that a week or ten days from now may see a satisfactory settlement of the chaotic conditions presently prevailing.

Iron and Steel.

Things have been extremely quiet this week. There is no alteration in prices to record. Latest quotations:—Dunswart, 29s.; Union Steel Corporation, Ltd., angles and ordinary sized rounds and flats, 36s.; small angles, 38s. 6d.; small flats and rounds, 37s. 6d.; imported iron and steel flats, small, 40s. to 50s.; larger sizes, 38s. 6d. to 55s.; ¼in. and 5-16in. rounds, iron and steel, 55s.; ⅜in. iron, 40s.; steel, 7-16in., 44s.; mild steel, 43s.; ¾in. iron and steel, 42s. 6d.; ⅞in. to 2in., rounds, 39s. 6d.; larger sizes, 52s. 6d. to 62s. 6d.; ¼in. square iron, 60s.; ⅜in., 47s. 6d.; ½in. to 2in. square iron, 38s. 6d.; larger sizes, 45s. to 52s. 6d.; square mild steel, ⅞in., 41s. 6d.; 1¼in. to 3in., 40s.; larger sizes, 59s. 6d. to 64s.; channels and joists, 47s. 6d. to 48s. 6d.; imported angles, 45s. 6d. to 47s. 6d.; ⅝in., 10¾d.; ¾in., 10¼d.; 1in., 9½d.; 1¼in. to 2in., 8½d. to 8¾d.; larger sizes, 7½d. to 8d.; spring steel flats, 8½d. to 9d. per lb.; mild steel plates, 1-16in., 40s. to 41s.; 3-16in., 39s. to 40s.; 5-16in., 35s. to 36s.; ½in., ⅜in., ⅝in., ⅞in., and 1in., 35s. to 42s. 6d.; bolts and nuts, ⅜in., 1s. 2½d. to 1s. 4d. per lb.; ½in., 77s. 6d. per 100 lb.; ⅝in., 66s.; ¾in., 64s.; nuts, ⅜in. and ¾in., 87s. 6d.; fish plates, bolts and nuts, ⅜in., ¼in., ½in., 9½d. per lb.; ⅝in., 72s. 6d.; ¾in., 68s. 6d. per 100 lb.; dog spikes, 35s. per 100 lb.; rivets, ¼in., 1s. 3d. per lb.; ⅜in., 10d.; ½in., 64s.; ⅝in., 60s. 6d. per 100 lb.; tool steel, 3s. 6d. to 3s. 11d. per lb.; brass rods, ⅜in., round, 1s. 10d.; ½in., 1s. 8d.; ⅝in. and upwards, 1s. 6d. to 1s. 9d. per lb.; copper rods, 2s. 2d. to 2s. 6d. per lb.; copper tubes, 2s. 6d. per lb.; drill steel, 7½d.; hollow, 1s. 0½d.; wire nails, 42s. 6d. to 57s. 6d.; shovels, 65s. to 70s.; wheelbarrows, 70s.; picks, 45s. to 75s.; pick handles, 35s.; fencing wire, 30s. to 50s.; barbed wire, 33s. to 34s. 6d. per 98lb. coils, 24s. to 25s. per 68 lb. coils; screening, 3s. to 9s. 6d. per square yard; cyanide for outside mines, 1s. 6d. to 1s. 7d. per lb.; zinc shavings, about 1s. per lb. The price for steel at Home is about £60 a ton. There is a fair demand for certain sizes in galvanised iron piping, particularly in ½in., which is ruling at about 6d. to 7d. per foot. Two thousand boilermakers employed in the Jarrow shipyards have struck as a protest against a 15 per cent. reduction in wages.

The second-hand iron and timber yards have no progress to report regarding increased business, which remains very quiet. Stocks in hand of iron and timber are fairly plentiful and are ruling at 1s. 2d. for iron and 6d. to 8d. for timber.

Engineering Shops.

Business is fairly brisk, with no outstanding features, but the tone is rather more hopeful in regard to the future as soon as things settle down to normal again.

Wage Reductions.

Miners have rejected an offer to reopen the Mount Morgan Mine conditionally on accepting 20 per cent. reduction in wages.

A ballot taken by the Federation of Engineering and Shipbuilding Trades on the question of a reduction in wages of 3s. per week on May 1, and a further 3s. on May 30, has resulted in a majority in favour of acceptance of such reductions.

It is reported that there has been a complete stoppage in the Welsh tinplate industry, throwing 20,000 workers out of employment. There had been a recent drop of wages by 40 per cent., while a further slide of 30 per cent. is to take place in August.

The Federation of Master Cotton Spinners has decided to notify operatives of a 30 per cent. reduction in wages. About 15,000 workers will be affected by this reduction. Since a 28 per cent. advance was made a year ago, the cotton spinning industry has been very depressed. The cotton manufacturers are expected to serve a similar notice on their quarter of a million operatives.

Base Metals.

Mr. T. G. Trevor, Inspector of Mines, Pretoria, in a recent report on the opening up and working the Union's base metal propositions, has laid some interesting facts before us. Rhodesia's base metal output in 1919 was £775,251 against the Union's total of £607,441, which furnishes much food for thought. He hints that a working scheme might be developed whereby the owner of the land would get some benefit without discouraging the prospector and mine promoter, who in the past has been frightened off such propositions by the exorbitant sums demanded by the farmers for their land. Mr. Trevor regards the bushveld as "probably one of the most mineralised portions of the earth's surface. There are, he says, 14,000 square miles containing workable coal, the vast majority giving an evaporative power of over 8, which makes it a valuable fuel. He anticipates that the oil shales in the Wakkerstroom district may give employment to 10,000 natives and 200 whites. Mr. Trevor thinks favourably of the "ferruginous horizons" near Pretoria, which are presently being exploited by the Pretoria Iron Works.

Timber and Building Materials.

Business has only been middling this week, inquiries having fallen off considerably. Stocks on hand and arriving are good, but, as reported last week, owing to labour unrest, later consignments from the Baltic are not expected to be so satisfactory as at present. The building trade still remains very quiet. Three by nine deals and scantlings, 1s. 5d. to 1s. 6d.; floorings, 9½d. to 9¾d. (a rise of about ¾d.); ceilings, 6¼d. to 7d. (a rise of about ½d.); beaver boards, 5d.; oregon and pitchpine, 9s. to 9s. 6d. (a drop of 6d. to 1s.); corrugated iron, 24ft. gauge, 10½d. to 1s.; furniture timber, Japanese oak, 1in. to 2in., 1s. 9d. to 1s. 10d. per square foot; Burmah teak, 21s. 6d. for the best; seconds, 20s., free on rail; American oak, 1in. to 3in., 1s. 6d.

to 1s. 8d. per super; American black walnut, 1in. to 1in., 1s. 6d. per super, free on rail; West African mahogany, 1in. upwards, 2s. 3d. per square foot, free on rail; 3 ply ash, 5 m.m., 10d. per super. Stock bricks are 70s.; mixed, 60s.; wire cuts, £1 10s. to £5; pressed bricks, £5 per 1,000 at kiln; white lime, 7s; unslaked, 10s. 6d; blue lime, 4s. 6d; blue plaster, 5s. 6d; cement, 11s. 6d a bag; damp, course and roofing, 1 ply, 37s. 6d.; 2-ply, 17s., 3-ply, 55s. 3d

After protracted negotiations between employers and operatives in the building trade in Britain, an agreement has been arrived at for a reduction in wages after 16th inst of 2d. an hour.

Trade and Conditions in America.

A leading American importer, in the course of a chat, said that during the past two months or so there had practically been no change in prices, at any rate, no lower prices, the trend being towards improvement in most lines. The mining business, however, was pretty bad, especially copper; the copper mines had nearly all closed down, very few working, or working at only about 10 to 15 per cent. of their output. Lead and zinc mines are much in the same position, while most of the silver mines have ceased operations because the Government is paying for silver about twice the market price of it under the Pitman Act. The iron and steel industry remains about the same; makers are anxious to sell, but manufactures are increasing faster than the orders for same. There seems a tendency for business generally to improve, and it is thought that by about September next prices may become a little more normal and much more business be done. My informant further said, once get this year's crops in and our chances of doing better business will much improve. With regard to collecting a huge indemnity from Germany, he stated that, although in his opinion the Allies were entitled to the uttermost farthing possible, he yet thought that it would be sounder policy not to squeeze Germany too much. That country was even now the economic centre of Central Europe, and the sooner normal or fairly normal conditions were restored there the better for the whole world. In his opinion, the Allies would be lucky if they succeeded in settling for one half of the £11,000,000,000 demanded, and probably before the end even that moiety would be considerably reduced.

Electrical Goods.

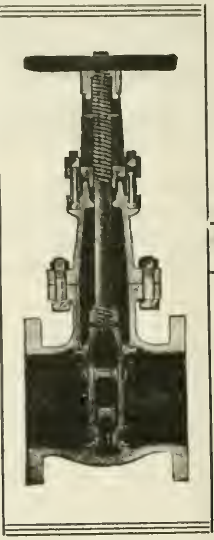
Business has improved somewhat during the past week both in town and along the Reef, and country orders are coming in better than of late. A consignment of 5,000 half-watt lamps has arrived, and relieved the shortage existing, and further supplies are shortly expected. These lamps, which were until a few days ago about 6s. for 100-candle power and 10s. for 200-candle power, have declined about 20 per cent.; tubing and accessories have gone down about 10 per cent. during the past few days. Everything else is firm. Keyholders are scarce at from 3s. to 4s. Stocks are arriving freely from Britain and the Continent.

Dutch Oilfields.

From the Hague it is announced that the Second Chamber have passed the Djambi Oilfields Development Bill; and from Washington that the State Department, in a Note to Holland on the question of the Djambi oilfields, says the solution of the oil problems of the world lies in the application of the principle of equal opportunity for the nationals of all countries. Experienced and responsible American interests are ready to co-operate with the Dutch Government in the development of Djambi.

Use of Oil Instead of Coal.

In view of the present coal shortage in Britain, Mr. Sydney North, a well-known expert on oil-driven machinery, has declared that there is no necessity for shortage of power owing to lack of coal. Machinery, he says, can be converted for the use of oil in an hour, and a week would be



Not only is the design and build a little better, but the quality of the FAIRBANKS valve is a little better also.

Further big stocks—all types—are arriving.

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ample time for installing the requisite tanks and pipes for storing and supplying oil. Fifty per cent. of the furnaces of the large London power-houses are thus being converted and nearing completion. The railways are following suit.

Oil for Locomotives.

It is reported that the chief engineer of the Great Central Railway has invented an oil burner whereby locomotives can be quickly and simply adapted for the using of liquid fuel, entailing very little alteration to the fire-box.

Effects of the Coal Strike.

It is estimated that there are 5,000,000 men out of employment, affecting 15,000,000 women and children; that 20 million pounds have been already lost to the miners themselves in wages, 18 millions lost to the Exchequer, 30 millions lost in shortage of coal through the pits remaining idle, and 10 millions lost every week of the strike through contingent unemployment and half employment It is reported that orders for upwards of 200,000 tons of coal have been placed in America and numerous orders for Belgian coal.

Famine is stalking, especially in South Wales, where practically every industry is stagnant and women and children are underfed.

Decontrol of British Railways.

It is announced that the railway companies and the three railway unions have signed an agreement establishing joint councils to deal with industrial questions, which will probably avert the threatened trouble in August, when Government control of the railways ceases.

British Railways.

The Minister of Transport, Sir Eric Geddes, stated in the House of Commons during the week that the Government had arranged to pay the railway companies £51,000,000 in full settlement for their war services. Further, that an agreement between the companies and the Government would be embodied in a new Railway Bill, which would also provide for the grouping of the railways. The Bill was already endorsed by all the interests concerned.

Threatened British Shipping Hold-Up.

In spite of the Federated Shipping Union having concluded an agreement with the owners, ships' stewards and cooks at all ports are refusing to sail on reduced wage terms equalling 50s. monthly.

Shipping Strike in America.

Owing to a reduction of 15 per cent. in wages made by the Shipping Board, numerous marine workers have ceased work in most of the American ports, and it is expected that upwards of 30,000 seamen and oilers will leave the ships at New York very shortly.

The report of the Railways and Harbour Board for the year ended December 31, 1920, states that 108 locomotives at a cost of £1,721,131, 526 coaches at a cost of £3,016,659, and 4,418 wagons and vans, at a cost of £3,547,480, were on order, en route, or under erection. Of these, 201 coaches, 2,986 wagons and vans were being constructed in Union workshops, at an estimated cost of £1,835,968 Rolling stock placed in service in 1920 included 111 locomotives, 121 coaches, and 1,917 wagons and vans, which should help to relieve the present coal congestion.

The approximate earnings of the South African Railways and Harbours for the week ended April 30 show the total figure is £399,650, of which passenger traffic yielded £102,535, goods £180,278, and coal £77,834. Harbours total for the same period is £18,068, showing falls below estimates of £35,552 and £4,946 respectively.

The Hamburg-Amerika Steamship Company has declared dividends of 8 per cent. each for the year 1919 and 1920. Mr Hugo Stinnes, who, it is stated, has a very great influence over the German Government, was rejected at the re-election of directors of the company, owing, it is said, to his having started a competitive service to South America without first consulting the Hamburg-Amerika Line, in which he is a large shareholder.

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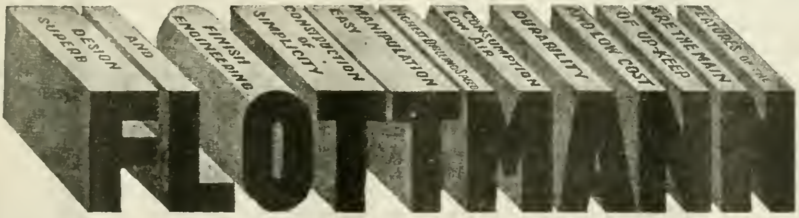

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RHODESIAN SECTION.

A Year of Rhodesian Mining.

The total production of gold during 1920 (says the Rhodesian Secretary for Mines in his annual report) amounted to 552,498 ounces and the values declared for the year amounted to £3,056,549, but it should be mentioned here that this total includes gold premiums for some of the 1919 production. The 1919 production was 593,222 ounces valued at £2,499,498, and though the pooling scheme came into existence during 1919, the higher value for gold known as the gold premium was not brought to account until 1920. The premiums declared covered the period from June to December, 1919, but against this it may be noted that of the 1920 production the premiums only cover the period January to July, 1920. Thus, whilst the 1920 values are increased by the 1919 premiums, they do not contain the total amount of premium which has accrued in 1920, as the period for August to December, 1920, will go towards the 1921 totals, and the premium reached a high figure during the last six months of 1920. The banks continued to pay 77s per standard ounce during 1920, and the premium adjustments were arranged later when the gold was sold in London. The premiums varied from time to time; thus from June to September they averaged 17s. per ounce; October, 1919, to January, 1920, £1 9s. 8d.; February to April, £1 0s. 9d.; and May to July, 1920, £1 7s. 1d.

Eight mines produced over 10,000 ozs. during the year, viz., Shamva, 96,643 ozs.; Globe and Phoenix, 89,231 ozs.; Lonely, 64,246 ozs.; Falcon, 33,709 ozs.; Rezende, 32,494 ozs.; Gaika, 14,242 ozs.; Arcturus, 12,968 ozs.; Fred, 12,273 ozs. These mines produced 64·39 per cent. of the total production, and the Arcturus came forward as a big producer for the first time in 1920. The following mines produced over 5,000 ounces in the year: Connemara, 5,710 ozs.; Golden Valley, 6,165 ozs.; Abercorn, 5,918 ozs.; Turkois, 5,641 ozs.; New Eclipse, 5,246 ozs.; and Jessie, 5,072 ozs.

The silver production shows a decrease in ounces, but a higher value total than in 1919, owing to the increased price paid for silver. The premiums on silver fluctuated considerably, but the average price, including such premiums as had been brought to account, was 7s. 3d. per ounce, and the total value declared contained premiums for the same period of 1919 as has been mentioned in the case of gold. The production for 1920 was 158,982 ounces, a decrease in comparison with 1919 of 13,000 ozs., but the value declared in 1920, inclusive of premiums, figured at £58,178, as compared with £34,099. The principal producers of silver were: Falcon Mine, 63,507 ozs.; Shamva, 27,525 ozs.; and Rezende, 19,661 ozs.

The Falcon Mine produced 96 per cent. of the copper which was declared, and the remainder of the production was made up from the Umkondo Mine, Victoria, and two or three small producers. The copper was declared in the first instance at £80 per ton, subject to adjustment on receipt of account sales, and a heavy adjustment of values covering the period April, 1919, to March, 1920, was made during the year under review. But in any case the copper production was better in 1920 than in 1919, as 3,108 tons were declared in 1920 as against 3,012 tons. The declared value of 1920 with adjustments amounted to £333,111 in comparison to £207,470. The price of copper steadily fell during the year, and towards December reached the lowest figure that has been experienced for some years, and it was therefore to be expected that the smaller producers, who had no appreciable amount of gold and silver in their ore, as in the case with the Falcon ore, would be forced to suspend work, and no new producers of copper took their place. Copper fell to £70 per ton, and, with increased costs of production, it is doubtful whether copper properties can be worked at a profit on that basis, and owners prefer to wait for a fall in mining expenses before taking the risk of opening up and developing new properties.

THE YEAR WITH THE LONELY.

The Lonely report for 1920 states that, as the result of the past year's development, the ore reserves at December 31 last show a slight increase in tonnage, but a decrease in value, being estimated at 202,845 tons, of a value of 20·80 dwts. as compared with 199,739 tons, of a value of 23·54 dwts. on December 31, 1919. Milling operations were carried on continuously during the year. The total tonnage crushed, 59,270, an increase of 3,850 tons; yield, 64,408 ozs., a decrease of 7,391 ozs. Average recovery per ton crushed, 21·72 dwts. Working costs, 53s. 11·97d. per ton milled, an increase of 4s. 3·17d. per ton, and, including royalty paid to British South Africa Co. (£22,442), 60s. 1d. per ton. Profit realised £178,597, and £58,129 was brought in, making £236,726, dealt with as follows: Dividends Nos. 22 and 23 (together, 50 per cent.), less tax, £111,790; British and Rhodesian income tax and additional remuneration to directors, £44,040; to depreciation, £12,167; balance of unappropriated profits carried forward, £68,729. A considerable sum has now to be provided for capital expenditure on new machinery and plant, and the board has decided, after full experiments, to instal four Crossley gas-producers to replace the steam plant and supply the additional power required. Ample supplies of native timber suitable for fuel for the wood plant are obtainable. The consulting engineer expresses the conviction that a substantial saving in power cost will be effected by the installation of this plant, and that its cost (estimated at about £75,000, including erection) will be redeemed by the savings effected in less than three years.

Gold Discovery.

A discovery of gold is reported to have been made in Gatineau Valley, about 90 miles north of Ottawa. It is stated that the ore yields £93 worth of gold per ton!

The Latest Diamond Conference.

Mr. G. R. Hofmeyr, C.M.G., Administrator of South-West Africa, has been presiding at a conference of producers of diamonds in South-West Africa and in the Union and of representatives of the Diamond Syndicate in London. An arrangement has been reached which is satisfactory to all those concerned.

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